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Appointment and Procedure of the Commission

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1. *Appointment of the Commission.*—We the members of the Commission appointed by the Government of India "to report on Indian University Education and suggest improvements and extensions that may be desirable to suit present and future requirements of the country" have the honour to submit our Report. We are grateful for the opportunity which we were given to survey the work of the universities, to assess their contribution to the educational progress of the nation, to appraise the value of their objectives and achievements and to examine their structure and functions in view of the great changes that have occurred in the political, economic and social life of the country in recent years.

2. *Members of the Commission.*—The scope of our enquiry is set forth in the resolution of the Government of India, Ministry of Education, No. 55-5/47-D/3, dated the 4th November 1948.

The following were appointed members of the Commission :—

1. Dr. S. Radhakrishnan, M.A., D. Litt., LL.D., F.B.A., Spalding Professor of Eastern Religions and Ethics at the University of Oxford. (Chairman)
2. Dr. Tara Chand, M.A., D. Phil. (Oxon), Secretary and Educational Adviser to the Government of India.
3. Dr. (now Sir) James F. Duff, M.A., (Cantab), M. Ed. (Manchester), LL.D. (Aberdeen), Vice-Chancellor, University of Durham.
4. Dr. Zakir Hussain, M.A., Ph.D., D. Litt., Jamia Millia Islamia, Delhi—(now Vice-Chancellor, Muslim University, Aligarh).
5. Dr. Arthur E. Morgan, D.Sc., D. Eng., LL.D., Former President, Antioch College, First Chairman, Tennessee Valley Authority, President, Community Service Inc.
6. Dr. A. Lakshmanaswami Mudaliar, D.Sc., LL.D., D.C.L., F.R.C.O.G., F.A.C.S., Vice-Chancellor, University of Madras.

7. Dr. Meghnad Saha, D.Sc., F.R.S., Palit Professor of Physics; Dean, Faculty of Science; and President, Post-Graduate Council of Science, University of Calcutta.

8. Dr. Karm Narayan Bahl, D.Sc., (Panj.); D. Phil. and D. Sc. (Oxon), Professor of Zoology, University of Lucknow.

9. Dr. John J. Tigert, M.A. (Oxon.) LL.D., Ed. D., D.C.L., D. Litt., L.H.D., formerly Commissioner of Education of the United States, and President Emeritus of the University of Florida.

10. Shri Nirmal Kumar Sidhanta, M.A. (Cantab.), Professor of English and Dean, Faculty of Arts, University of Lucknow. (Secretary).

3. *Terms of Reference.*—The terms of reference of the Commission were to consider and make recommendations in regard to :—

(*i*) The aims and objects of university education and research in India.

(*ii*) The changes considered necessary and desirable in the constitution, control, functions and jurisdiction of universities in India and their relations with Governments, Central and Provincial.

(*iii*) The Finance of universities.

(*iv*) The maintenance of the highest standards of teaching and examination in the universities and colleges under their control.

(*v*) The courses of study in the universities with special reference to the maintenance of a sound balance between the Humanities and the Sciences and between pure science and technological training and the duration of such courses.

(*vi*) The standards of admission to university courses of study with reference to the desirability of an independent university entrance examination and the avoidance of unfair discriminations which militate against Fundamental Right 23 (2).

(*vii*) The medium of instruction in the universities.

(*viii*) The provision for advanced study in Indian culture, history, literatures, languages, philosophy and fine arts.

(*ix*) The need for more universities on a regional or other basis.

(*x*) The organisation of advanced research in all branches of knowledge in the universities and Institutes of higher research in a well co-ordinated fashion avoiding waste of effort and resources.

(*xi*) Religious instruction in the universities.

(*xii*) The special problems of the Banaras Hindu University, the Aligarh Muslim University, the Delhi University and other institutions of an all-India character.

(*xiii*) The qualifications, conditions of service, salaries, privileges and functions of teachers and the encouragement of original research by teachers.

(*xiv*) The discipline of students, hostels and the organisation of tutorial work and any other matter which is germane and essential to a complete and comprehensive enquiry into all aspects of university education and advanced research in India.

4. *Procedure of Work.*—We were anxious to receive the help of those who had experience of university education or had shown interest in its problems. A comprehensive questionnaire was circulated to the members of the Constituent Assembly, Premiers and Ministers of Education in the Provinces and States, Vice-Chancellors of universities, Directors of Public Instruction, Heads of Colleges and Heads of Departments in universities, educationists, publicists and other prominent men throughout the country. In all about 2,900 copies of the questionnaire were sent out.

Correspondents were invited to submit answers on those aspects of the university problem in which they were specially interested. About 600 replies were received from the people addressed. The very full and varied answers received in response to our enquiry provide an interesting survey of the present conditions of university education. We are grateful to our witnesses and correspondents for their most helpful co-operation. The Questionnaire and summaries of written memoranda and of evidence are submitted in a separate volume. The publication *in extenso* of the memoranda and evidence would have required several volumes and might not have added appreciably to the value of the present abridged account. They are, however, sent to the Ministry of Education for purposes of record.

We also obtained from the colleges and institutions of the universities statistical and other information of importance for the consideration of our problem, relating to the number of students, residential accommodation, salaries of teachers, security of tenure, age of retirement, published contributions by the teachers, number

of working days etc. We wish to express our thanks to the Vice-Chancellors, Directors of Public Instruction, Registrars, Heads of Colleges, and others for their great courtesy in helping us with this information.

Our recommendations are largely based on the valuable evidence and the constructive suggestions we have received. We have endeavoured to interpret the hopes and ambitions of university men and women and tried to give form to their aspirations and ideals.

5. *Inauguration.*—The Commission held its first meeting in New Delhi on 6th December, 1948, when the Hon'ble Maulana Abul Kalam Azad, Minister for Education, Government of India, addressed the meeting and explained to us Government's intentions in regard to the purpose and scope of the inquiry.

6. *Tour of Universities.*—After preliminary discussions the members of the Commission visited the different university centres as follows :—

13th to 15th December, 1948 ..	Delhi University, Delhi.
19th December 1948 to 2nd January, 1949 ..	.. Madras University, Madras.
3rd to 7th January, 1949	.. Osmania University, Hyderabad (Dn.)
8th to 11th January, 1949	.. Nagpur University, Nagpur.
12th to 19th January, 1949	.. Calcutta University, Calcutta (and Viswabharati, Shanti-Nikatan).
20th to 23rd January, 1949	.. Allahabad University, Allahabad.
24th to 29th January, 1949	.. Lucknow University, Lucknow.
30th January to 2nd February, 1949 ..	.. Muslim University, Aligarh.
9th to 14th February, 1949	.. Calcutta University, Calcutta.
15th to 17th February, 1949	.. Gauhati University, Gauhati.
18th to 20th February, 1949	.. Patna University, Patna.
21st to 25th February, 1949	.. Hindu University, Banaras.
26th to 28th February, 1949	.. Agra University, Agra.
1st to 4th March, 1949	.. Rajputana University, Jaipur.
5th to 6th March, 1949	.. Ahmedabad.
6th to 12th March, 1949	.. Bombay University, Bombay.
14th to 17th March, 1949	.. Utkal University, Cuttack.
18th to 20th March, 1949.	.. Andhra University, Waltair.
22nd to 24th March, 1949	.. Annamalai University, Annamalainagar.
26th to 28th March, 1949	.. Madras University, Madras.
29th to 31st March, 1949	.. Travancore University, Trivandrum.
1st to 2nd April, 1949	.. Mysore University, Bangalore.
3rd to 6th April, 1949	.. Mysore University, Mysore.
6th to 7th April, 1949	.. Mysore University, Bangalore.

11th to 12th April, 1949	.. Saugor University, Saugor.
13th April, 1949	.. Jamia Millia Islamia, Delhi.
29th to 30th April, 1949	.. East Panjab University, Solan (Simla .. Hills).
15th to 16th July, 1949	.. Baroda University, Baroda.
17th to 19th July, 1949	.. Poona University, Poona.

The names of the universities and the colleges visited and the persons interviewed are found in Appendix ' A '.

Thus we were able to obtain a great deal of direct knowledge of the working of the universities and colleges. Within the limited time at our disposal, it was not possible for us to visit all the institutions and colleges which we would have wished to, but in the centres which we visited, we had discussions with the Ministers of Education, Vice-Chancellors, Members of the Syndicate (or Executive Council), leaders of public opinion, Principals and Professors and other members of the Staff, met them in small groups and heard their representatives. In many places we met the representatives of the students and acquainted ourselves with their points of view. We are indebted to them all for their very helpful attitude.

We are sensible of the inconvenience we caused by our visits to the university authorities and other generous hosts who looked after our comforts wherever we went. We gratefully acknowledge not only the generous hospitality but the enthusiastic co-operation we received from individuals, organisations and agencies, official and non-official. When we are indebted to so many, it will be invidious to mention names but we cannot refrain from mentioning the gracious hospitality extended to us in Government House, Lucknow by Shrimati Sarojini Naidu immediately before her fatal illness.

7. *General Observations.*—We were everywhere struck by a deep general awareness of the importance of higher education for national welfare and an uneasy sense of the inadequacy of the present pattern. While it is generally recognized that the universities should provide the best teaching over the entire field of knowledge of which its own resources may permit, that they should offer this teaching to the widest range of students irrespective of class, sex, caste or religion, that they should extend by original inquiry the frontiers of learning and, above all, mould and shape students not merely by the training of the intellect but by the disciplining of the spirit, university men and women were aware of serious shortcomings in the functioning of the universities in regard to these matters. The wonder is not that the universities have fallen short in many respects, but that they have achieved some measure of success in several directions. But this is no cause for complacency. The marked deterioration of

standards in teaching and examinations and increasing dissatisfaction with the conduct of university administration and elections to university authorities are matters of great concern. The universities as the makers of the future cannot persist in the old patterns, however valid they may have been in their own day. With the increasing complexity of society and its shifting pattern, universities have to change their objectives and methods, if they are to function effectively in our national life. A policy of drift in the vague hope that, if the universities are granted full autonomy and are permitted to pursue their own ends with intelligence and imagination, higher education will take care of itself, will be dangerous. Automatic and spontaneous adjustment will not take us to the future we want. We must develop a comprehensive positive policy within the limits of which there should be ample scope for pioneering and experimentation.

It is to the formulation of such a policy that we addressed ourselves after we reached Simla in the third week of April. We had to consider the evidence that we obtained in reply to the questionnaire, discuss questions of principle involved in university re-organisation, and set forth the best methods for implementing necessary changes in the present circumstances. The results of our survey are embodied in the Report.

The Commission is indebted to the members of its staff for the loyal and intelligent way in which they have served the Commission.

CHAPTER I

Historical Retrospect

I.—Higher Education up to 1857.

1. Universities in Ancient India. 2. Mediaeval Universities. 3. British Period: Calcutta Madrasah and Banaras Sanskrit College. 4. Parliament Debate of 1793. 5. Grant's Memorandum. 6. Minto, Moira and Rammohan Roy. 7. Bombay: Mountstuart Elphinstone. 8. East and West: Macaulay. 9. Resolution of Bentinck and his Council. 10. The Work of Christian Missions. 11. The Medium of Instruction and Proposals for Universities. 12. Medical Education. 13. Education in Engineering. 14. Legal Education. 15. Wood's Despatch of 1854. 16. Establishment of Universities at Calcutta, Bombay and Madras.

II.—University Education from 1857 to the present day.

17. Development of Universities from 1857-1882. 18. Proposals for New Universities. 19. The Education Commission of 1882. 20. Expansion of Higher Education from 1882-1902. 21. The Universities Commission of 1902. 22. The Universities Act of 1904. 23. A New Political and Economic Consciousness. 24. Government Resolution on Educational Policy in 1913. 25. The Calcutta University Commission. 26. The Rise of New Universities. 27. The Inter-University Board. 28. The Auxiliary Committee of the Indian Statutory Commission. 29. The Report of the Central Advisory Board on Educational Development.

I.—Higher Education up to 1857.

1. *Universities in Ancient India.*—The universities of modern India owe very little to our ancient or mediaeval centres of learning but one must not forget the existence of such centres since very early times. The *parishads* or assemblies of Brāhmans learned in the Vedas and Dharma Sūtras probably attracted a number of students desirous of acquiring knowledge like Svetaketu in the Chāndogya Upanishad. Later there grew up well organised centres of learning of which the most famous were Taksasīlā and Nālanda. One of the Jātakas relates the story of the sixteen year-old son of the King of Banaras who went to distant Taksasīlā with a thousand pieces of gold, the fee for his teacher who was to take him through the various branches of learning. The curriculum at Taksasīlā appears to have included the Vedas and the Vedāngas as also the eighteen arts which comprised of medicine and surgery, astronomy and astrology, agriculture and accountancy, archery and snake charming. Students at Nālanda often spent as many as twelve years studying the Vedas and the Upanishads, the works of Mahāyāna Buddhism and Jainism, the systems of philosophy and logic. Nālanda was a Buddhist centre but the atmosphere and work of the institution appear to have been very similar to those of the Hindu centres, with a close relationship of the teacher and pupil, with individual instruction.

diversified by public discussions. Taksasīlā probably flourished as an educational centre till the fifth century A.D. while Nālanda was destroyed towards the close of the twelfth century. Vallabhi in Kathiawad and Kānchi in the south were great centres of learning about the same time as Nālanda. Of Vikramasīlā and Odantapuri in Bihar we know much less, but Nadia in Bengal continues its traditions down to the present day. Here the students specialised in logic, but law and grammar were also studied.

2. *Mediaeval Universities.*—While some of those Hindu centres of learning in the East and the South continued their work throughout the middle ages, the Mohamedan rulers encouraged the establishment of colleges (madrasahs) at places like Lahore, Delhi, Rampur, Lucknow, Allahabad, Jaunpur, Ajmer and Bidar. Sher Shah who later became emperor was a student at Jaunpur, and among the subjects he studied there were history and philosophy, Arabic and Persian literature. The curriculum of these colleges paralleled the *trivium* and *quadrivium* of the European institutions and included grammar, rhetoric, logic and law, geometry and astronomy, natural philosophy, metaphysics and theology while poetry was a source of pleasure to all. Most of the important institutions attempted to specialize in one or more branches of knowledge as Rampur did in logic and medicine, Lucknow in theology and Lahore in astronomy and mathematics. The medium of instruction was mainly Arabic and there were many famous scholars in Arabic, teaching in the institutions of higher learning. While most of these institutions have disappeared, some still carry on the traditions of the old Madrasahs.

3. *British Period: Calcutta Madrasah and Banaras Sanskrit College.*—When Muslim rulers were replaced by the British, the latter felt the need of doing something for the education of the people and one of the noteworthy acts of Warren Hastings, the first Governor-General, was to establish the Calcutta Madrasah which was intended " to qualify the sons of Mahomedan gentlemen for responsible and lucrative offices in the State " and the course of studies followed the traditional pattern embracing theology, logic, rhetoric, grammar, law, natural philosophy, astronomy, geometry and arithmetic. A few years later John Owen, Chaplain to the Bengal Presidency, requested the Government to establish schools for the purpose of teaching English " to the natives of these provinces ". The administrators do not seem to have paid much attention to this and when the next important educational institution was established a few years later at Banaras, it was " for the preservation and cultivation of the Laws, Literature and Religion of the nation, to accomplish the

same purpose for the Hindus as the Madrasah for the Mahomedans and specially to supply qualified Hindu assistants to European Judges ".

4. *Parliament Debate of 1793.*—In 1792-93 when the House of Commons debated the renewal of the East India Company's Charter, Wilberforce, the leader of the evangelical party carried a resolution emphasizing the adoption of such steps as would lead to the advancement in useful knowledge of the inhabitants of British India and moved that in order to attain this object the Court of Directors should be commissioned to send out from time to time schoolmasters and missionaries. Wilberforce's move was vigorously opposed by people who urged that the Hindus had " as good a system of faith and morals as most people " and that it would be madness to give them any kind of learning other than what they possessed. One of the Directors is further reported to have observed that " they had just lost America from their folly in having allowed the establishment of schools and colleges and it would not do for them to repeat the same act of folly in regard to India ".

5. *Grant's Memorandum.*—A few years later Charles Grant who was one of the Directors of the East India Company submitted to the Company a memorandum in which he lamented the low moral condition of the people of India and exhorted the Company to improve it by imparting to them a knowledge of the English language to serve as " a key which will open to them a world of new ideas ". He referred to what had been done by the Muslim rulers employing the Persian language and teaching their subjects to use it. To quote his words : " It would be extremely easy for Government to establish, at moderate expense, in various parts of Provinces, places of gratuitous instruction in reading and writing English, multitudes, especially of the young, would flock to them ; and the easy books used in teaching, might at the same time convey obvious truths on different subjects........The Hindus would, in time, become teachers of English themselves ; and the employment of our language in public business, for which every political reason remains in full force, would, in the course of another generation, make it very general throughout the country. There is nothing wanting to the success of this plan, but the hearty patronage of Government ".

6. *Minto, Moira and Rammohan Roy.*—Lord Minto's Minute written in 1811 regretted the neglect of literature and science in India and suggested improvements in existing colleges in addition to the establishment of new ones. Two years later when the charter of the East India Company was being again renewed, a clause was inserted stipulating that " a sum of not less than one lakh of rupees in each year

shall be set apart and applied to the revival and improvement of literature and for the introduction and promotion of knowledge of the sciences among the inhabitants of the British territories in India ". Shortly afterwards Lord Moira observed in a Minute that public money would be ill-spent on the existing colleges but that the tuition which was then available had to be improved and diffused in places so long deprived of this benefit. This suggestion was acted upon by a group of men led by one of the greatest Indians of the century, Raja Rammohan Roy, who formed an association for founding an institution where the Hindus would receive instruction in European Languages and Science. The Hindu College was founded in 1817 and in 1818 the Bishop of Calcutta opened an institution which was to serve the double purpose of training young Christians as preachers and of imparting a knowledge of the English language to Mohamedans and Hindus. The proposal to establish a Sanskrit College at Calcutta elicited a vigorous protest from Rammohan Roy who did not want his young contemporaries to acquire " the vain and empty subtleties " of " speculative men ". These protests proved unavailing, but in a few years the Court of Directors wrote with approval of the efforts to raise up a class of persons qualified for high employment in the civil administration of India : " As the means of bringing about this most desirable object we rely chiefly on their becoming through a familiarity with European literature and science, imbued with the ideas and feelings of civilised Europe—on the general cultivation of their understanding, and specifically on their instruction in the principles of morals and general jurisprudence. "

7. *Bombay* : *Mountstuart Elphinstone.*—Shortly after this in 1830 the Court of Directors communicated their policy to the Governments of Madras and Bombay who had not so far done very much for the propagation of Western Education, in spite of Mountstuart Elphinstone's famous Minute of 1823 urging the establishment of schools for teaching English and the European Sciences. Elphinstone expressed the same views before the Lords' Committee in 1830 and in a communication to the Commissioners for Indian Affairs he was more explicit :— " I conceive it is more important to impart a high degree of education to the upper classes than to diffuse a much lower sort of it among the common people. The most important branch of education is that designed to prepare natives for public employment. If English could be at all diffused among persons who had the least time for reflection, the progress of knowledge, by means of it, would be accelerated in a ten-fold ratio since every man who made himself acquainted with a science through English would be able to communicate it in his own language to his countrymen. " As a first step towards this he proposed the establishment of a school at Bombay

where English might be taught " classically " and where instruction might also be given in that language on history, geography and science. A school on these lines had already been established by him at Bombay and in 1833 a similar school was established at Poona, leading next year to the founding at Bombay of the Elphinstone College which was to be instrumental in training "a class of persons qualified by their intelligence and morality for high employment in the civil administration of India ".

8. *East and West* : *Macaulay.*—While these developments were taking place in Bombay and Bengal the demand for instruction in English grew more and more insistent. English books were sold by the thousand and there was practically no demand for Sanskrit or Arabic books. In order to satisfy the popular demand English classes had been attached to the Madrasah and the Sanskrit College at Calcutta as also to the Agra College (established in 1818) but those failed in their object as the students had no time to go through the additional course while doing their heavy oriental work. Hence started the controversy between those who wanted to impart instruction through Arabic and Sanskrit and those who wanted to use English. This matter was placed before the Government in 1835 by the Committee of Public Instruction and elicited a Minute from Macaulay who was then the Law Member. He discussed the Act of 1813 which provided a sum of money for the revival and promotion of literature and for the introduction of a knowledge of sciences among the inhabitants of British territories. He disputed the view that by literature Parliament could have meant only Arabic and Sanskrit literature as he had not yet found an orientalist " who could deny that a single shelf of a good European Library was worth the whole native literature of India and Arabia ". He argued that English was the language spoken by the ruling class and it was likely to become the language of commerce " throughout the seas of the East." He therefore came to the conclusion that the Government was free to employ its funds in teaching what was better worth knowing than Sanskrit or Arabic, what the Indian desired to learn rather than these old languages. Further " neither as the languages of law nor as the languages of religion have Sanskrit or Arabic any peculiar claim to our encouragement " and " it is possible to make natives of the country thoroughly good English scholars " to which end efforts should be directed. The ideas expressed in this Minute were not the result of Macaulay's stay in India, as before coming out to this country he had already said in the House of Commons :—
" Are we to keep the people of India ignorant in order that we may keep them submissive ? Or do we think that we can give knowledge without awakening ambition ? Or do we mean to awaken ambition

and to provide it with no legitimate vent?..........It may be that the public mind of India may expand under our system until it has outgrown that system, that by good government we may educate our subjects into a capacity for better government, that having become instructed in European knowledge, they may, in some future age, demand European institutions. Whether such a day will ever come I know not. Whenever it comes it will be the proudest day in English History..........The sceptre may pass away from us. Victory may be inconstant to our arms. But there are triumphs which are followed by no reverse. There is an empire exempt from all natural causes of decay. These triumphs are the pacific triumphs of reason over barbarism : that empire is the imperishable empire of our arts and our morals, our literature and our laws ".

9. *Resolution of Bentinck and his Council.*—Macaulay's Minute was approved by the Governor-General, Lord William Bentinck and his Council. On 7th March, 1835, they passed a resolution in which they emphasised :—

(1) that the " great object of the British Government ought to be the promotion of European literature and science amongst the natives of India and that all funds appropriated for the purposes of education would be best employed on English education alone ;

(2) that while the colleges of oriental learning were not to be abolished, the practice of supporting their students during their period of education was to be discontinued ;

(3) that Government funds were not to be spent on the printing of oriental works ; and

(4) that all the funds at the disposal of the Government would henceforth be spent in imparting to the Indians a knowledge of English literature and science. "

This resolution of the Government was heartily welcomed by the leading Hindus but the feelings of the Mahomedans towards English education were not quite friendly. As the Sanskrit scholar, H. H. Wilson, put it : " Upon the proposal to appropriate all the funds to English education, there was a petition from the Mahomedans of Calcutta, signed by about 8,000 people, including all the most respectable Maulvis and native gentlemen of the city. After objecting to it upon general principles they said that the evident object of the Government was the conversion of the natives ; and they encouraged English exclusively and discouraged Mahomedan and Hindu studies, because they wanted to induce the people to become Christian." In order to allay these suspicions Lord William Bentinck enunciated a policy of strict religious neutrality : " In

all schools and colleges........interference and injudicious tampering with the religious belief of the students mingling direct or indirect teaching of Christianity with the system of instruction, ought to be positively forbidden." Among the first fruits of the new policy were the establishment of a college at Hooghly in 1836, the proposal to establish a college at Dacca (and one eventually at Patna) in 1840, the transfer of the Calcutta Hindu College to the Government and its development into the Presidency College.

10. *The Work of Christian Missions.*—The policy of religious neutrality was not accepted by the missionaries who had by this time founded a number of institutions, among the earliest of which were the products of the work of Danish Missionaries who arrived at Tranquebar in 1706. In 1716 they opened an institution for the training of teachers and next year two charity schools at Madras,—one for the Portuguese and the other for the Tamil children, teaching them English and the principles of Christianity. Of the second batch of these missionaries the most famous was Schwartz who persuaded local Rajahs to open English schools at Tanjore, Ramnad and Sivaganga. In Bengal the pioneers were Carey, Marshman and Ward who started work at the Danish settlement at Serampore in 1793.[1] Twenty years later we find the Baptists working at Dinajpore and Jessore, the London Missionary Society at Dutch Chinsurah and Vizagapatam, the American Board in Bombay and some workers at Bellary. By 1820 the activities of Missionary Societies had expanded considerably but their primary aim was not educational. Even when they took up educational work they paid more attention in the beginning to the study of modern Indian languages than to English. When they started English Schools (one of the pioneers being Dr. Alexander Duff in 1830) it was mainly to have an opportunity of preaching the Gospel to the upper classes of society. By 1840 these mission workers had almost universally come to accept the view that English education would lead to the spread of Christianity; and so institutions for the teaching of English and Western knowledge were started in all parts of the country. In Bombay Dr. John Wilson founded the college which was later named after him. At Madras Anderson and Braidwood started a school in 1837 which, under the guidance of Dr. William Miller became the Madras Christian College. In 1841 Robert Noble founded a college at Masulipatam and in 1844 Stephen Hislop opened a College at Nagpur, while the Church Missionary Society founded the St. John's College at Agra in 1853. Indian pupils came to these institutions for the

[1] The Serampore College established in 1818 obtained a charter from the Danish King in 1827 raising it to the status of a university and giving it the power to conferring degrees.

acquisition of modern knowledge and were willing to put up with compulsory religious instruction though they were not much attracted by the teaching of Christianity. The Mission workers realised this but were willing to carry on their educational work with the same fervour as before, provided they were allowed to continue their Bible classes. Dr. Duff was very explicit as regards the aims of these institutions: " One great object was to convey, as largely as possible, a knowledge of our ordinary improved literature and science to the young persons ; but another, and a more vital object was.... to convey a thorough knowledge of Christianity with its evidences and doctrines. Our purpose was therefore to combine in close, inseparable and harmonious union, what has been called a useful secular with a decidedly religious education. "

11. *The Medium of Instruction and Proposals for Universities.*—While there was this divergence of opinion about the place of religion in education, in 1844 a Government Resolution enjoined that for public employment in every case preference would be given to those who had been educated in Western science and were familiar with the English language. English had been definitely established as the medium of instruction by more than one communique of the Government typical among which were the observations of Lord Auckland :— " I would make it my principal aim to communicate through the means of the English language a complete education in European literature, philosophy and science to the greatest number of students who may be ready to accept it. " In Bombay the policy regarding the medium of instruction changed between 1821 and 1843. In the former year the Bombay Education Society had observed : " In imparting to the natives useful knowledge to any extent and with the hope of any good and permanent effect it is evident that the language of the country must be the chief and proper vehicle. The English language is almost confined to the Island of Bombay and is principally to be found among those who are anxious to acquire it for the furtherance of mercantile pursuits or for facilitating their intercourse or employment with the Europeans........ It is impossible to look with any hope of success to imparting knowledge generally and usefully in a language which must remain to the greater portion a foreign one ". In 1843 the policy was radically altered and it was generally recognised that education must be imparted through the English language. In Madras the controversy did not arise because the first efforts of the Presidency were directed to the extension of primary education and it was not till 1841 that a High School was opened and entitled " the University ", a Collegiate Department being recognised in this institution about 10 years later. While Madras was content to use the title of a University in this

fashion, the Bengal Council of Education proposed in 1845 the establishment of a University of Calcutta with a view to conferring on the products of the rapidly increasing number of new institutions " some mark of distinction by which they might be recognised as persons of liberal education ". This proposal was however not accepted by the Court of Directors.

12. *Medical Education.*—The genesis of medical education is to be traced to the appointment of a committee in 1833 to report on the study of medical education imparted in several institutions in Calcutta. A question had been raised by the Committee of Public Instruction as to, " whether it would be expedient to confine the medical instruction to English lectures and to adopt for class books small English treatises, discarding Sanskrit medical books altogether". The Committee recommended the establishment of a new institution in which " the various branches of medical sciences cultivated in Europe should be taught and as near as possible on the most approved European system ". This ultimately led to the foundation of the Calcutta Medical College where in one of the early courses of lectures dissection had to be introduced. Here is a graphic account of the first attempt to dissect a dead body : " It had needed some time, some exercise of the persuasive art before Madhusudan could bend up his mind to the attempt ; but having once taken the resolution, he never flinched or swerved from it. At the appointed hour, scalpel in hand, he followed Dr. Goodeve into the godown where the body lay ready. The other students, deeply interested in what was going forward but strangely agitated with mingled feelings of curiosity and alarm, crowded after them, but dared not enter the building where this fearful deed was to be perpetrated ; they clustered round the door ; they peeped through the jilmils, resolved at least to have ocular proof of its accomplishment ; and when Madhusudan's knife, held with a strong and steady hand, made a long and deep incision in the breast, the lookers-on drew a long gasping breath like men relieved from weight of some intolerable suspense ".[1] The first hospital was opened in 1833 and three years later a hospital for women was added. In 1844 four students of the College in charge of Dr. Goodeve went to England to complete their medical education. The foundation stone of the present college hospital was laid in 1848 and it was opened in 1851.

In Madras the establishment of a medical school was sanctioned in 1835 and 7 years later the Board of Governors submitted a scheme for starting a Collegiate class in the Faculty of Medicine to be

1 Quoted from a speech of Mr. J. E. D. Bethune delivered while unveiling Madhusudan's portrait.

attached to the Institution. This scheme was disapproved by the Court of Directors, but in 1852 we note the Governor-in-Council observing that Medical Classes have been established at the Madras Medical College with distinguished success. Three years later this institution was recognised by the Royal College of Surgeons of London as one of the Colonial Schools of Medicine and Surgery. In Bombay on the initiative of the then Governor, Sir Robert Grant, a scheme was drawn up for the establishment of a Medical Institution and the College was formally opened in 1845. Professorships were added in the following years and the College was recognised by the Royal College of Surgeons in 1854.

13. *Education in Engineering.*—Education in Engineering seems to have begun with an Engineering Institution in Bombay as early as 1824 but we know very little of its work. A class for training Engineers was opened in the Elphinstone Institution in 1844 but for want of suitable candidates for admission it was broken up after three years. In Bengal a Chair of Engineering was sanctioned for the Hindu College in 1844 but it remained vacant as no Professor was available. In 1848 the Earl of Dalhousie suggested the establishment of an Engineering College in each of the three Presidencies. But on account of numerous controversies no college came into existence till 1856, when a new institution was opened at Writers' Buildings in Calcutta. In Madras an institution was started in 1858 and in Bombay a school for the improvement of Arts and Manufactures was opened in 1856. In the North Western Provinces (the present United Provinces) the establishment of a college was a direct outcome of irrigation and other engineering schemes undertaken by the Government. In 1847 it was decided to construct the Ganges Canal and large workshops were erected at Roorkee. The Lieutenant-Governor (Mr. Thomason) proposed the establishment of a college to supply a staff of engineers. The scheme was sanctioned and the college named after him was opened the same year. The college underwent a rapid expansion within the next few years and in spite of the disturbances of 1857 we find it a well-developed institution by 1860.

14. *Legal Education.*—The early teaching of law was carried on at the Calcutta Madrasah and the Banaras Sanskrit College where Muslim and Hindu Laws were respectively studied. Macaulay referred to the teaching of law in his famous Minute, and a few years later, a Committee was asked to report how studies connected with jurisprudence might be introduced into the superior colleges. In 1842 a Professorship was created in the Hindu College but after a first course of lectures by a distinguished Advocate-General no appointment was made till 1847, when the post was again sanctioned.

A few years later the Council of Education decided that Law should have a place in the annual Examination for Senior Scholarships and the Law Class was organised on a permanent footing in 1855. The same year a Professorship of Law was sanctioned at the Madras Institution and a Professorship of Jurisprudence created at the Elphinstone College in Bombay.

15. *Wood's Despatch of 1854.*—This brings us to the famous despatch of Sir Charles Wood to the Court of Directors of 1854 which has been described as "The Magna Charta of English Education in India". It set forth a scheme of education far wider and more comprehensive than any one which had been suggested so far. It enunciated the aim of education as the diffusion of the Arts, Science, Philosophy and Literature of Europe. It laid down that the study of Indian Languages was to be encouraged and that the English Language should be taught wherever there was a demand for it, and that both the English Language and the Indian Languages were to be regarded as the media for the diffusion of European knowledge. The point of the Despatch in which we are most interested is the decision to establish universities. The Court of Directors felt that the time had arrived for the establishment of universities in India which might encourage a regular and liberal course of education by conferring academic degrees as evidence of attainment in the different branches of Arts and Sciences. They agreed with the proposal which had been made a few years earlier to establish universities on the model of the London University and which were to consist of a Chancellor, Vice-Chancellor and a Senate. The Senate was to have the management of university funds and to frame regulations under which periodical examinations would be held in the different branches of Arts and Sciences by examiners selected from their body or nominated by them. The function of the universities was described as that of conferring degrees upon such persons as would come from any of the affiliated institutions and after having pursued a regular course of study for a given time would have passed some required examinations. The detailed regulations for the examinations were to be framed with due cegard to the class of the affiliated institutions and they were to exclude all subjects connected with religious beliefs. Professorships were to be instituted in various branches of learning among which would be Law, Civil Engineering and Classical Oriental Languages. Calcutta and Bombay were to have the first universities which would utilize the services of the existing Council of Education at Calcutta and the Board of Education at Bombay. A university might also be created at Madras or in any other part of India where a sufficient number of institutions

existed from which properly qualified candidates for degrees could be supplied. The existing institutions of Higher Education were enumerated in the Despatch and it was laid down that the affiliated institutions would be periodically visited by Government Inspectors. This Section of the Despatch concluded with a hope that a spirit of honourable rivalry would be promoted among these institutions and the division of university degrees and distinctions into different branches would direct the efforts of highly educated men to the studies which were necessary to success in the various active professions of life.

16. *Establishment of Universities at Calcutta, Bombay and Madras.* —The universities were not immediately established; Minutes and a Committee intervened. The report of the Committee suggested various examinations leading to diplomas and degrees, the two varieties of the latter being the ordinary and honours degrees. In addition to courses in the Arts the Committee suggested those in Law, Medicine and Engineering, with provisions for ordinary and honours degrees in these as well. Towards the end of 1856 the Government of India approved of the general plan of the Committee; drafts of Bills for the establishment of three universities were soon prepared and the first of these passed early in 1857 received the Governor-General's assent on 24th January. The establishment of this first university at Calcutta was followed by those at Bombay and Madras on the same lines and it is interesting to compare the structures of these three. While the Governor-General was the Chancellor of the Calcutta University, the Governors of Bombay and Madras were the heads of the other two. The Calcutta Senate had 38 members of whom six were Indians while Bombay had five Indians in a Senate of 29, and Madras three out of 40. Each of the three universities had at first the four Faculties of Arts, Law, Medicine and Engineering to which a faculty of Science was added later. The relationship between the universities and their affiliated colleges was not clearly defined but the territorial jurisdiction of the Universities of Bombay and Madras was limited to the respective Presidencies, while that of Calcutta was not similarly circumscribed. The regulations for the courses and diplomas were not exactly the same for the three Universities but followed similar lines. The first University Entrance Examination was held at Calcutta in 1857; 244 candidates appeared of whom 162 were successful. 13 candidates appeared for the first degree examination of 1858 and only two were successful, one of whom was Bankim Chandra Chatterjee, the famous novelist and author of the national song *Vande Mataram.*

II.—University Education from 1857 to the present day.

17. *Development of Universities from 1857-1882.*—The history of the first 25 years of university work is mainly one of growth in

the number of colleges and students but no new university was established till 1882. At the first Entrance Examination of the three Universities 219 candidates were successful—162 at Calcutta, 21 at Bombay and 36 at Madras. In 1882, 7,429 candidates appeared of whom 2,778 were successful. The growth of candidates also gives us an idea of the increase in other directions. In 1857 the total number of colleges in India was 27 while in 1882 there were about 75 colleges. During the first 14 years 2,666 candidates passed the First Arts (Intermediate) Examination, 850 the B.A. Examination and 151 the M.A. During the next 11 years the corresponding numbers were 5,969, 2,434 and 385.

One point about the development of education during 1871-83 was emphasized by the Calcutta University Commission: during these years the number of High Schools in Bengal, Bihar and Orissa rose from 133 to 209 but there was a decrease in the number of Government and Aided Schools. "The organisers of Bengal High Schools were discovering that these schools could be run on a self-supporting basis without Government grants, and they need not therefore submit to the conditions which the Department imposed. The flood of candidates which made the rise of these schools possible all aimed at one single goal: success in the Entrance Examination of the University; and the requirements of this examination were already the only regulating or controlling influence for a large part of the schools of Bengal."

Thus the Department of Education was gradually losing its influence on Secondary Education and its place was being taken by private agencies and the University.

Another point to be noted for this period is that though the Despatch of 1854 had suggested a gradual withdrawal of Government from direct management of colleges, this was found impracticable: on the contrary, new Government colleges had to be established. The Calcutta Presidency College had been intended to form the nucleus of the Calcutta University; and it is worth noting that, when the University was founded two years later, the reason put forward for the failure to establish a series of University Professorships such as the Despatch had recommended was that the ample financial aid to the Presidency College met the need.

The universities thus remained purely affiliating bodies and no attempt was made to develop them into a "federal" type or with any provision for inter-collegiate instruction. London University had supplied the model and it is ironical that soon after the establishment of the Indian Universities, London itself gave up "affiliation" and substituted for it constituent Colleges and a system of open examinations without regard to the candidates' place of education.

As affiliating bodies the Universities made it their sole function to conduct examinations and to regulate the admission of candidates to these through a supervision of the places of instruction. Elaborate regulations were framed and the freedom of the teacher consequently curtailed.

18. *Proposals for New Universities.*—The increase in numbers of candidates for the examinations and the vast extent of the area under the jurisdiction of the Universities led to proposals for the establishment of new universities. In 1865 a number of influential people supported by the Lieutenant-Governor of the Punjab mooted a proposal for the establishment of an Oriental University for that Province and in 1867 the British Indian Association of the North-Western Provinces (United Provinces) petitioned the Viceroy, pointing out some defects of the educational system and recommending the establishment of a university in the Province in which the study of the eastern classics and the modern languages would be encouraged along with western literature and science. The Government of India was unable to accede to either of these demands, but agreed to attend to the points about the reform of education and also to found a University College in the Punjab. The aim of this institution was to encourage that aspect of education which was being neglected, *viz.*, the study of Sanskrit and Arabic and the diffusion of knowledge through the medium of an Indian language. This college went on expanding its activities for ten years before a fresh demand was made for a University in the Punjab, but this time the Government of India favoured the idea. So an Act of 1882 formally constituted the University with the Lieutenant-Governor of the Punjab as the Chancellor, and with a constitution more or less similar to those of the existing universities. The Senate was to be the supreme body of the University and was to be representative in character. The University was to be an affiliating one, but one section of the Act authorised the University to take up teaching work through the appointment of University Professors and Lecturers.

19. *The Education Commission of 1882.*—In 1882 the Government of India appointed a Commission " to enquire into the manner in which effect had been given to the principles of the Despatch of 1854 and to suggest such measures as it may think desirable in order to the further carrying out of the policy therein laid down ". Though the working of the Indian Universities was not specifically included within the scope of the Commission it collected a good deal of valuable information about the colleges, especially with regard to

attendance, fees, discipline and later career of students which will be found extremely useful. There were several points in the recommendations which interest us :—

(1) While advocating the gradual withdrawal of the State from the direct support and management of institutions of higher education it felt that this withdrawal could only be by slow and cautious steps, handing over a college or secondary school to a body of Indians provided there was a reasonable prospect that the cause of education would not suffer through the transfer ;

(2) Provision is to be made for ordinary and special grants to Colleges ;

(3) There should be alternative courses in the larger colleges ;

(4) Certain general principles have to be followed as regards college fees and exemption from them ;

(5) New regulations about scholarships have to be framed ;

(6) An attempt should be made to prepare a moral text-book based upon the fundamental principles of natural religion such as may be taught in all Government and non-Government Colleges ; and

(7) " the Principal or one of the Professors, in each Government and Aided College, deliver to each of the College classes, in every Session, a series of lectures on the duties of a man and a citizen ". (Mr. Telang in a dissenting note wrote against these two recommendations).

The Government of India, while accepting the main recommendations of the Commission, directed the preparation of an annual report reviewing the progress of education in the country ; and the first of these published in 1886 defined and classified colleges and published some valuable statistics regarding enrolment, examination results and expenditure of colleges from 1881-85, comparing expenses on Collegiate Education derived from public and private funds. The Review for the next five years has interesting figures regarding collegiate education and the finances of universities from which one gathers that while the Universities of Calcutta and Madras were entirely independent of Government aid, the Bombay University received a small grant and the Punjab University a larger one.

It was during these five years that the fifth Indian University was established ; an Act of 1887 brought the Allahabad University into being. The Muir College had been opened the preceding year





and the demand for a university made nineteen years earlier was renewed. The quinquennial review of 1897-1902 writes: "The Local Government carefully considered the exact form the University should take, and in especial whether in addition to prescribing courses and conducting examinations it should maintain a staff of professors and even of private teachers, after the pattern of the universities of Germany. While recognising the great value of a university of this type, the Lieutenant-Governor considered that, at all events at first, the University should confine its operations to the direction of the methods and aims of instruction; adapting them to the needs, circumstances, provisions and predilections of the country.... The Act imposes no limitations on the scope and activity of the University, but hitherto Allahabad has conformed to the practice of the three original universities, and confined itself to conferring degrees on candidates who pass its examination, after following a prescribed course of study in an institution affiliated to it."

20. *Expansion of Higher Education from 1882-1902.*—The recommendations of the Education Commission of 1882 were followed by a rapid expansion of higher education during the next two decades. The number of High Schools increased rapidly and the courses at these institutions were mostly of the same type leading to the university Entrance examination. The majority of those who passed this examination were attracted to the colleges because university degrees were the main passport to lucrative Government employment and there were few other openings for educated young men. The recommendations also led to the growth of a large number of new institutions fostered by private enterprise, where education was less expensive and, in some cases, less efficient. University education in India, however, owes a great debt to the private societies like the Deccan Education Society of Poona, the Arya Samaj in the Panjab and later to the National Council of Education in Bengal. Nor can the contributions of private individuals like Ishwar Chandra Vidyasagar and Pachayappa Mudaliar be forgotten. In 1882 the total number of colleges was less than 75 (68 of them were regularly affiliated); during the next decade 61 new colleges were affiliated while the following one saw the establishment of 50. The total number of affiliated colleges in 1901-02 was therefore 179, of which 126 were in British India and the rest in the States, Burma and Ceylon. The enrolment in colleges too showed a proportionate increase and we may take the total number of students in Arts Colleges to illustrate the point. In 1881-82 there were 5,399 students in these colleges; on 31st March 1887 the number was 8,060, the figures for the following years being 9,656, 10,618,

11,546 and 12,424. The numbers of successful candidates at the B.A. examination were 287 in 1882, 573 in 1885, 898 in 1892.

21. *The Universities Commission of 1902.*—This expansion of higher education and the rise of colleges which depended mainly or wholly on fees led to problems which had to be tackled by the Government, and on 27th January, 1902 a Commission was appointed "to enquire into the condition and prospects of the universities established in British India ; to consider and report upon any proposals which have been, or may be made for improving their constitution and working, and to recommend such measures as may tend to elevate the standard of university teaching, and to promote the advancement of learning."

The main recommendations of the Commission are as follows :—

1. The legal powers of the older universities should be enlarged so that all the universities may be recognised as Teaching Bodies but the local limits of each university should be more accurately defined and steps taken to remove from the Calcutta list the affiliated colleges in the Central Provinces, United Provinces, etc.

2. The Senate, the Syndicate and the Faculties have to be reorganised and made more representative than before.

3. The affiliation rules have to be framed in such a way as to secure—

(*a*) that no institution shall be admitted to affiliation unless on the fullest information ;

(*b*) that no institution once admitted be allowed to fall below the standards of efficiency required for affiliation and the Syndicate should satisfy itself from time to time on this point.

4. There should be a properly constituted Governing Body for each college.

5. Attention should be paid to the residence and discipline of students.

6. The courses and methods of examination in all subjects have to be changed according to the suggestions made in the Report.

22. *The Universities Act of 1904.*—The Universities Act of 1904 embodied the main recommendations of the Commission and reconstituted the Governing Bodies of the universities. The Senate of the university was to have not less than 50 and not more than 100 members. The number of elected fellows was fixed at 20 for the three older universities and 15 for the other two. Statutory recognition was given to the Syndicates with adequate representation of university teachers on them. Conditions for affiliation to the

university were clearly laid down and were intended to be rigorously observed. The university was given the power of making provision for the instruction of students through the appointment of University Professors and Lecturers and to do all acts which tend to the promotion of study and research. The Government was vested with certain powers regarding the regulations to be framed by the Senates and the Governor-General in Council was empowered to define the territorial limits of the universities.

Indian opinion was very critical of this Act as the number of seats in the Senate thrown open to elections was very small and the restriction of numbers was supposed to create a majority for Europeans. The provisions for the exercise of teaching functions by the University were not considered very important as such provisions in the older Acts had not so far been utilized, while the new regulations for affiliation of colleges were regarded as means to hamper Indian private effort in the field of education. The immediate result of the Act was to reduce the number of affiliated colleges which in 1902 had stood at 192 for British India and the Indian States. Five years later we find that in spite of the affiliation of some new colleges the total was 174 and in 1912 the number was not more than 170, though 10 years later the number grew to 207. While there was no substantial increase in the number of affiliated colleges between 1902 and 1922 the total number of students educated in these colleges had substantially increased. In the former year the number was in the neighbourhood of 20,000, while in 1922 it was over 50,000. Thus the restriction on the recognition of new colleges only increased the enrolment of individual colleges as there was no diminution in the eagerness for higher education in the absence of vocational courses.

23. *A New Political and Economic Consciousness.*—This keenness for university education can be best understood in the context of the social and political background of the early years of this century. Macaulay's prophecy that instruction in Western knowledge would lead to demand for western political institutions was justified by the turn of events after half a century of English education. The foundation of the Indian National Congress in the closing years of the 19th century marks the beginning of the new political consciousness. The agitation over the partition of Bengal showed the strength of the new born Indian Nationalism and its effects were felt in a reaction against the education which was responsible for the new ideas. It manifested itself through the foundation of institutions independent of the universities. Thus the Gurukul Kangri of Hardwar and the institutions conducted by the

National Council of Education in Bengal remained independent of the system of education controlled by the State. The activities of the latter extended to studies in Arts and Science as also in Technology, but while the college of Technology flourished and has developed into an excellent institution, the Arts College languished after the first flush of enthusiasm. The desire to advance the economic prosperity of the nation led to greater emphasis on scientific and technical education and private bodies attempted to undertake this training for a limited number of students either through institutions established in this country or through scholarships for sending students to foreign countries. Private effort however could not achieve very much, and politicians gifted with foresight felt the necessity of the establishment of new colleges and universities with an emphasis on science and technology.

24. *Government Resolution on Educational Policy in 1913.*—A Government Resolution on educational policy in 1913 clarified the policy in regard to Higher Education. It indicated that as India would not be able to dispense altogether with the affiliating universities for a long time, it was necessary to restrict the area over which such universities would have control and secondly to create new teaching and residential universities within each of the Provinces. Universities of the latter type were to be established at Dacca, Aligarh and Banaras while other new universities would be established at Rangoon, Patna and Nagpur. It might also be possible to sanction the conversion into local teaching universities of those colleges which had attained the requisite standards of efficiency. The War which broke out the next year delayed the developments planned in this Resolution but the two Universities at Banaras and Patna were founded in 1916 and 1917 respectively. The former intended to develop Hindu culture and the study of Applied Sciences, owed its existence to the untiring efforts of Pandit Madan Mohan Malaviya and the latter was meant to cater to the needs of the new Province of Bihar and Orissa.

25. *The Calcutta University Commission.*—In 1916 the Calcutta University wanted to break fresh ground through the creation of its Post-Graduate Departments. There was practically no provision so far for direct teaching by the University and now under the dominating leadership of Sir Asutosh Mukerji the University decided to concentrate Post-Graduate teaching directly in the University and appointed a number of Lecturers and Professors for the purpose. While Sir Asutosh Mukerji was engaged in this work the Government of India decided to appoint a Commission for holding an enquiry of a very comprehensive and searching character into the problems of

the Calcutta University. The terms of reference included all aspects of Collegiate and University Education. Problems of Secondary Education were not excluded from its purview and it was expected to study the organisation and working of other Indian universities to help it to formulate the policy of the Calcutta University. The Commission submitted a voluminous report in 1919 dealing with practically every problem of Secondary and University Education. The main recommendations were as follows :—

1. The Intermediate Classes of the University were to be transferred to Secondary Institutions and the stage of admission to the University should be that of the present Intermediate Examination;

2. Secondary and Intermediate Education was to be controlled by a Board of Secondary Education and not by the University ;

3. The Government of India should cease to have any special relationship to the University of Calcutta and the Government of Bengal should take its place ;

4. The duration of the Degree Course should be three years after the Intermediate Stage, the provisions being applied immediately in regard to Honours Courses and soon after to Pass Courses ;

5. The teaching resources of the city of Calcutta were to be organised to create a real teaching University and the project of a university at Dacca was to be carried into effect at the earliest possible moment. The mofussil colleges were to be organised in such a way as would encourage the gradual rise of new university centres by the concentration of higher teaching at a few points.

6. Special attention was to be paid to women's education and a Board constituted for the purpose.

7. The Government service system being unsuitable for universities, a new organisation of the teaching service in universities was necessary.

8. Problems of vocational and professional training including that of teachers, lawyers, medical men, engineers, architects and agriculturists were to be seriously taken in hand by the University and numerous reforms were suggested.

9. The medium of instruction for most subjects up to High School stage was to be the " Vernacular " but for later stages it should be English (except in dealing with Classical and Modern English Language).
10. The method of examinations needed radical improvement.

26. *The Rise of New Universities.*—The Report of this Commission, though primarily intended for the Calcutta University, did not produce the desired effect owing to the controversies between the University and the Government regarding financial support which was absolutely essential for implementing the recommendations of the University Commission. Two new Teaching Universities had already been started in the Indian States, one at Mysore and the other at Hyderabad. The special features of the Mysore University are that it is almost entirely a State organisation and that its teaching activities are confined not to one centre but to two, Mysore and Bangalore. The Osmania University (Hyderabad) was founded through the efforts of Sir Akbar Hydari ; it is also under the control of the State and its claim to uniqueness was in its adoption of Urdu, the official language of the State, as the medium of instruction for all university classes. The M. A. O. College, Aligarh, founded in 1875 by Sir Syed Ahmed, was developed into the Muslim University to meet the special needs of the Muslim community as the Hindu University developed out of the Central Hindu College founded by Mrs. Annie Besant and was intended to cater to those of the Hindus. The United Provinces accepted the recommendations of the Calcutta University Commission and constituted in 1921 a Board of High School and Intermediate Education to organise and control secondary education in the Province. The Canning College and King George's Medical College, Lucknow, were merged in the Lucknow University, and the Muir Central College, the Ewing Christian College and the Kayastha Pathshala College, Allahabad, into the Allahabad University. In Bengal the main effect of the Report of the Commission was the establishment of the teaching university at Dacca while Rangoon became a University in 1920. Other new universities were established at Delhi in 1922, Nagpur (for the Central Provinces) in 1923, Andhra (for the northern part of Madras Province) in 1926, Agra in 1927 and Annamalai at Chidambaram in the southern part of Madras Presidency in 1929, the last one owing its existence to the generosity of the late Raja Sir Annamalai Chettiar. There was a gap of a few years before the third State University was established in Travancore, followed by Utkal (for the Province of Orissa) in 1943 Rajputana in 1947 and Saugor (for the Hindi-speaking part of Central Provinces) in 1947, the foundation of the last one being helped

by a donation from Sir Hari Singh Gaur. Assam had its University established at Gauhati in 1947, Poona (for a part of Bombay Presidency), Roorkee (incorporating Thomason Engineering College) and Kashmir Universities came into existence in 1948 and Baroda in April 1949.

Of these new universities Banaras is a teaching university directly under the Government of India and its territorial jurisdiction is confined by the Act to the recognition and constituting of colleges at Banaras. In the number of and variety of its Departments of teaching, Banaras outstrips all other teaching universities in India while the lay-out of the buildings on the campus with its teaching and residential blocks is more extensive than that at any other university. Established with the help of generous donations from private individuals and ruling princes it is now mainly the responsibility of the Government of India. Exactly parallel in its activities is the Aligarh University which however does not have as many faculties or buildings as Banaras, but which has been more of a model as regards corporate and residential life. Banaras and Aligarh retain their Intermediate classes which were not attached to the newer Universities of Dacca and Lucknow or the reconstituted University of Allahabad. Allahabad maintained the two-fold activity of teaching and affiliation for five years till its external side was removed to Agra. Allahabad and Lucknow attempted to follow the recommendations of the Calcutta University Commission. The Annamalai University, though on a smaller scale, followed the same pattern and it has more adequate buildings than most other residential universities. Agra, Utkal, Rajputana and Kashmir Universities are still purely affiliating universities while Patna and Nagpur have started teaching work in a few departments only within the last few years. Delhi has attempted to combine the teaching and federative activities and the former has expanded rapidly within the last ten years. Roorkee is a University with just one Faculty, that of Engineering, while the other universities combine teaching with affiliating work as the older universities are also doing now. The Bombay University Act was amended in 1928 and the constitution made more democratic than before. Its School of Economics and Sociology was established in 1919 and it has an extensive department of Chemical Technology as well. The Madras University Act of 1923 liberalised its constitution and enabled the University to assume a large amount of teaching activity on its own. Economics, Indian History, Philosophy, Political Science, Mathematics, Zoology, Biochemistry, Geography and Botany are some of the subjects in which the University supplements College teaching and offers facilities for research. The University teachers

are not over-burdened with routine duties in teaching, and are encouraged to undertake research. The teaching activities of the Calcutta University already referred to have been considerably expanded in recent years particularly in the Sciences, both pure and applied, and it now has about thirty departments. In some of these subjects the University offers courses for under-graduate students, but the teaching work of the University has been almost entirely confined to post-graduate and research students.

27. *The Inter-University Board.*—With the establishment of the new universities the Government of India felt the necessity of some agency to co-ordinate their work. A conference of Indian universities held in 1924 decided to establish an Inter-University Board, the functions of which were to be :—(*a*) to act as an inter-university organisation and bureau of information ; (*b*) to facilitate the exchange of professors ; (*c*) to serve as an authorised channel of communication and facilitate the co-ordination of university work ; (*d*) to assist Indian universities to get recognition for their degrees and diplomas in other countries ; (*e*) to appoint a common representative (or representatives) of India at Imperial or International Conferences on Indian education. The Board has acted as an advisory body but its influence has not been as potent as it might have been. The universities have not always been inclined to follow the advice given by the collective voice of the Vice-Chancellors which, in effect, the Board has become. The Board has, however, acted as a forum for discussion of university problems. It has also many publications to its credit among which is the *Handbook of Indian Universities*, which is the main source of information regarding Indian universities. Besides holding its own meetings at which various problems of university education are discussed, it has been organising quinquennial Conferences of Indian universities at which some of the most controversial issues of higher education are taken up for careful consideration by the representatives of the universities.

Of the educational investigations within the last 20 years two deserve special mention :—

28. *The Auxiliary Committee of the Indian Statutory Commission.*—(1) The Auxiliary Committee of the Indian Statutory Commission (known as the Simon Commission) which submitted its report in 1929 did not have any detailed recommendations about university education. After speaking with appreciation of the improvement in methods of teaching at the universities, of the original work produced by university men and of their training for corporate life it says : "But the theory that a university exists mainly, if not solely, to pass students through examinations still

finds too large acceptance in India; and we wish that there were more signs that the universities regarded the training of broad-minded, tolerant and self-reliant citizens as one of their primary functions. They have been hampered in their work by being over-crowded with students who are not fitted by capacity for university education and of whom many would be far more likely to succeed in other careers".

29. *The Report of the Central Advisory Board on Educational Development.*—(2) The results of the other investigation are embodied in the Report of the Central Advisory Board published in 1943. The chapter on university education plans the future of Indian universities on the basis of compulsory Primary Education and a new Secondary Education. The most valuable part of the Chapter is in its facts and figures with detailed calculations in regard to the future expansion of universities. One of the main recommendations relates to the etablishment of a University Grants Committee which has already been implemented. The establishment of the Grants Committee by the Central Government has been folowed by the setting up of a similar Committee in the United Provinces.

Information about Universities :

Name of University.	Date of foundation.	Present character of University.	Number of students in 1946-47.
Calcutta	1857	Affiliating and Teaching	45,008
Bombay	1857 (reconstituted 1928).	Affiliating and Teaching	43,090
Madras	1857 (reconstituted 1923).	Federative, Affiliating and Teaching.	28,888
Allahabad ..	1887 (reconstituted 1922).	Teaching	3,502[1]
Banaras	1916	Teaching	5,083
Mysore	1916	Teaching and Affiliating	9,350
Patna	1917	Teaching and Affiliating	15,471
Osmania	1918	Teaching	4,862
Aligarh	1920	Teaching	4,009

[1] Does not include Intermediate Students.

Name of University.	Date of foundation.	Present character of University.	Number of students in 1946-47.
Lucknow	1920	Teaching	3,893[1]
Delhi	1922	Teaching and Federative	4,311
Nagpur	1923	Teaching and Affiliating	5,734
Andhra	1926	Teaching and Affiliating	9,445
Agra	1927	Affiliating	9,936[1]
Annamalai ..	1929	Teaching	1,981
Travancore ..	1937	Teaching and Affiliating	5,715
Utkal	1943	Affiliating	3,662
Saugor	1946	Teaching and Affiliating	1,828
Rajputana ..	1947	Affiliating.	
East Punjab ..	1947	Teaching and Affiliating.	
Gauhati	1947	Teaching and Affiliating.	
Poona	1948	Teaching and Affiliating.	
Roorkee	1948	Teaching.	
Kashmir	1948	Affiliating.	
Baroda	1949	Teaching and Affiliating.	

[1] Does not include Intermediate Students.

CHAPTER II

The Aims of University Education

I.—New India.

1. The Impact of Political Change. 2. Universities as the Organs of Civilisation. 3. Intellectual Adventure. 4. An Integrated Way of Life. 5. Wisdom and Knowledge. 6. Aims of the Social Order.

II.—Democracy.

7. Plan of Treatment. 8. Value of the Individual. 9. Education as Growth. 10. Physical Education. 11. The Triune Character of the Human Mind. 12. Nature, Society and Spirit. 13. Natural Sciences, Social Studies and Humanities. 14. Unity of Mind and Interdependence of Knowledge. 15. Mechanical Learning. 16. Inwardness of Freedom. 17. Education as Initiation into a New Life. 18. Inadequacy of Education as Adjustment to Society. 19. Flexibility of the Educational System.

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IV.—Liberty.

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V.—Equality.

32. The Democratic Way of Life. 33. Freedom of Conscience. 34. Equality of Opportunity. 35. Economic Barriers. 36. Communal Ratios. 37. Assistance to Backward Communities.

VI.—Fraternity—National.

38. Extra-Curricular Activities. 39. Indiscipline. 40. The Residential System. 41. College a Community Centre. 42. National Discipline. 43. The Need for Culture. 44. The Un-Indian Character of Education. 45. Cultural Unity of India. 46. Conflict in India's Soul. 47. Critical Study of the Past.

VII.—Uninterrupted Continuity of Indian Culture.

48. The Indus Valley Civilisation. 49. The Vedic Period. 50. Buddhism. 51. Indian Influence Abroad. 52. South Indian Teachers. 53. The Spread of Islam. 54. The Influence of Christianity. 55. Chief Tenets of Indian Culture.

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56. Study of the Past. 57. The Epics. 58. Appeal of The Epics to the Youth. 59. Living Cultures.

IX.—Fraternity—International.

60. World-mindedness and National Sentiment. 61. Cultural Co-operation. 62. Provincialism. 63. Larger Patriotism. 64. Unesco. 65. Positive Peace. 66. World Citizenship. 67. Summary.

I.--New India.

1. *The Impact of Political Change.*—Great as were the changes that had taken place in the political and economic conditions of Indian society in the years that preceded the transfer of power on August 15, 1947, considerable as was the progress in education during that period, they are less great than the changes that have been crowded into these few months of freedom. The academic problem has assumed new shapes. We have now a wider conception of the duties and responsibilities of universities. They have to provide leadership in politics and administration, the professions, industry and commerce. They have to meet the increasing demand for every type of higher education, literary and scientific, technical and professional. They must enable the country to attain, in as short a time as possible, freedom from want, disease and ignorance, by the application and development of scientific and technical knowledge. India is rich in natural resources and her people have intelligence and energy and are throbbing with renewed life and vigour. It is for the universities to create knowledge and train minds who would bring together the two, material resources and human energies. If our living standards are to be raised, a radical change of spirit is essential.

2. *Universities as the Organs of Civilisation.*—He indeed must be blind who does not see that, mighty as are the political changes, far deeper are the fundamental questions which will be decided by what happens in the universities. Everything is being brought to the test of reason, venerable theologies, ancient political institutions, time-honoured social arrangements, a thousand things which a generation ago looked as fixed as the hills. If India is to confront the confusion of our time, she must turn for guidance, not to those who are lost in the mere exigencies of the passing hour, but to her men of letters, and men of science, to her poets and artists, to her discoverors and inventors. These intellectual pioneers of civilization are to be found and trained in the universities, which are the sanctuaries of the inner life of the nation.

In simpler conditions of life, in primitive societies, the leader can follow the urge of his instinct and take us to the scene of his vision. In the complex organisation of modern life, any reform requires careful thought and planning. Our leaders must be capable of intellectual analysis and imaginative insight.

3. *Intellectual Adventure.*—We must give up the fatal obsession of the perfection of the past, that greatness is not to be attained in the present, that everything is already worked out and all that remains for the future ages of the world is pedantic imitation of the past. When we are hypnotised by our own past achievements, when all our effort is to repeat a past success, we become fetish worshippers. If our cultural life is to retain its dynamism, it must give up idolatry of the past and strive to realise new dreams. We should think with the young men in the Latin poet that nothing is done while anything remains to do. All that man has yet done is very little compared to what he is destined to achieve. The present which moves backwards and forwards, which is a summary of the past and a prophecy of the future, is hallowed ground and we who tread on it should face it with the quality of reverence and the spirit of adventure. Universities are the homes of intellectual adventure.

4. *An Integrated Way of Life.*—A life of strenuous endeavour for human betterment is not possible, if we are not persuaded that life has a meaning. Many of our popular writers to-day seem to be possessed by the one desire to escape from the world of meaning and teach us the essential purposelessness of life. They make us believe, with a good deal of cleverness and sophistry, that life is infinitely complicated and totally inexplicable. Many of our students are taught to assume that free-will and personal responsibility are illusions, that human beings are conditioned almost wholly by their physical make-up and the society in which they live, and that the only sense that the religious statements make is emotional and subjective. This is a generation which knows how to doubt but not how to admire, much less to believe. This aimlessness, this indifference to basic issues, is to no small extent, responsible for the decline of standards, for the fading of ideals, for the defeat of human endeavour.

The purpose of all education, it is admitted by thinkers of East and West, is to provide a coherent picture of the universe and an integrated way of life. We must obtain through it a sense of perspective, a synoptic vision, a *samanvaya* of the different items of knowledge. Man cannot live by a mass of disconnected information. He has a passion for an ordered intellectual vision of the connections of things. Life is one in all its varied manifestations. We may study the factual relations of the different manifestations but we must have knowledge of life as a whole. It cannot be a collection of distracting scraps but should be a harmony of patterns. The subjects we study must be taught as parts of a connected curriculum.

5. *Wisdom and Knowledge.*—Our ancient teachers tried to teach subjects and impart wisdom. Their ideal was wisdom (*irfan*) along with knowledge (*ilm*), *jnanaṁ vijñana-sahitam*[1]. We cannot be wise without some basis of knowledge though we may easily acquire knowledge and remain devoid of wisdom. To use the words of the Upanisad, we may be the knowers of texts (mantravit) and not knowers of self (ātmavit)[2]. Plato distinguishes between factual information and understanding. No amount of factual information would make ordinary men into educated or ' virtuous ' men unless something awakened in them an innate ability to live the life of the soul.

" Where is the wisdom we have lost in knowledge ?
Where is the knowledge we have lost in information ?
The cycles of Heaven in twenty centuries.
Bring us farther from God and nearer to the dust "[3].

The strength of the new ' faiths ' among intellectuals is partly due to their claim to explain the universe. By professing to interpret all human activity in terms of a single thesis, they give to the modern educated men a sense of assurance and certainty formerly provided by religion. Since education is both a training of minds and a training of souls, it should give both knowledge and wisdom.

6. *Aims of the Social Order.*—We must have a conception of the social order for which we are educating our youth. We know what Hitler did in six years with the German youth. The Russians are clear in their minds about the kind of society for which they are educating and the qualities required in their citizens. They tried to remake man in a new image. Our educational system must find its guiding principle in the aims of the social order for which it prepares, in the nature of the civilisation it hopes to build. Unless we know whither we are tending, we cannot decide what we should do and how we should do it. Societies like men need a clear purpose to keep them stable in a world of bewildering change.

The outlines of the social philosophy which should govern all our institutions, educational as well as economic and political, are indicated in the preamble to our Draft Constitution. It reads :—

" WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN DEMOCRATIC REPUBLIC and to secure to all its citizens ;

[1] See *Bhagavadgita*—IX.1.
[2] *Chandogya Upanisad*—VII. 7·3.
[3] T. S. Eliot

JUSTICE, social, economic and political ;
LIBERTY of thought, expression, belief, faith and worship ;
EQUALITY of status and of opportunity ; and to promote among them all FRATERNITY assuring the dignity of the individual and the unity of the Nation ;

IN OUR CONSTITUENT ASSEMBLY this............... ....of............ ....(............day of August, 1949 A.D.) do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION ".

We are engaged in a quest for democracy through the realisation of justice, liberty, equality and fraternity.

II.—*Democracy.*

7. *Plan of Treatment.*—We shall take up the different problems of educational theory and practice and arrange them under the five heads of democracy, justice, liberty, equality and fraternity.

We shall consider under "Democracy" education as the development of body, mind and spirit of each individual with his specific nature, the relation of the different studies to the growth of the individual, the nature of human freedom and the need for social changes. There can be no democratic freedom without social justice which demands the freeing of the individual from poverty, unemployment, malnutrition and ignorance. This is not enough. We must cultivate the art of human relationships, the ability to live and work together overcoming the dividing forces of the time. Social harmony can be achieved by wise leadership and proper administration. Under *Justice* we will consider how universities should train technical men of all types, social leaders and wise administrators. Under *Liberty* we shall refer to the liberating character of all education, the need for the autonomy of the universities and for freedom of thought and expression for the teachers. The meaning of equality of opportunity in education, the barriers to it, especially the economic, communal ratios and the need for the assistance of scheduled castes and backward communities will be considered in the section on *Equality*. The idea of *Fraternity* will be treated at two levels, the national and the international. Closer co-operation in colleges and universities between the teachers and the pupils, the development of the residential system, of corporate life and a knowledge of India's culture and history will help to promote the

former. The latter will be attempted by fostering among the members of the university the spirit of 'one world' and acquainting them with the cultures and achievements of other peoples.

8. *Value of the Individual.*—The basis of democracy is the belief in the inherent worth of the individual, in the dignity and value of human life. It repudiates the totalitarian principle in all its forms, *viz.*, that the individual as such is useless and that he must be either destroyed or converted into an efficient unit in the power-machine of the State. Democracy affirms that each individual is a unique adventure of life.

9. *Education as Growth.*—The function of education is the guidance of this adventure to the realisation of the potentialities of each individual in the face of the actual world of men and things. It aims at the development of the individual, the discovery, training and utilisation of his special talents. Like all living organisms the individual grows by the impulse of his own self-development. The natural tendency of the child is to grow into maturity. From complete dependence on others the child has to grow into relative independence. The function of the teacher is to assist the growth by stimulation and guidance. The growth is advanced by the acquisition of knowledge and skills. These latter are intended to set free and develop the possibilities of human individuals.

Education is not a discipline imposed from above on an apathetic if acquiescent nature. It is a process of leading up the inward nature to its fulfilment. All true development is self-development.

The process of education as growth is continuous and life-long. It is said that a pupil gets a fourth of his education from his teacher, another fourth by his own intellectual effort, a third fourth from his fellow students and the rest in course of time through life and experience.[1] We learn from the teacher, by ourselves, from one another and from life or experience. Education is not always formal. Where we have a number of keen young men as members of an intellectual community, they educate one another through the daily give and take. Experience is a great teacher. We learn daily and hourly from our home, from our community, from the press, the radio and the movies. All life is experience and therefore education.

10. *Physical Education.*—Human beings are psycho-physical in nature. They have bodies which obey certain definite laws of growth. These must be kept in a state of health and physical fitness. Education of the body through physical exercises, sports

[1] ācāryāt pádam ādhatte sisyah pādam svamedhayā
pādam sa brahmacāribhyo pādam kālakramena tu.

and athletic activities helps to develop qualities of initiative, courage, discipline, fair play and team spirit. We cannot realise fully our intellectual possibilities without health and physical vigour. No great nation can be built without strong physical foundations.

11. *The Triune Character of the Human Mind.*—Human beings are not all built in the same way. They are of different types, reflective, emotional or active, though they are not exclusively so. They are distinguished on account of the dominance of emphasis of the one or the other. Cognition, feeling and will, though logically distinguishable are not really separable in the concrete life of mind. These three sides which answer to the familiar distinction of jnāna, bhakti and karma, express themselves through theoretical contemplation, aesthetic enjoyment and practical activity. These are found in different proportions in different individuals.

The true educator should understand the psychological make-up, the *svabhāva* of the pupil and adapt his teaching to the mind of the pupil. The difficulty is to discover the true inward being of each individual. In the same family we have individuals of different temperaments. A seer of the *Rg Veda* says : " I am a poet (kāruh), my father is a physician (bhisag) and my mother a grinder of corn (upalapraksini).[1] Even as medical men treat their patients with a view to their individual defects and prescribe remedies against the particular diseases to which they are inclined, the teachers should discover the tendencies and weaknesses of the individual pupils, encourage their desirable aptitudes and cure the weaknesses to which they are inclined.

In a well-planned educational system, opportunities will be provided at every level to the pupils for the exercise of their reflective powers, artistic abilities and practical work. The sensitive teacher will be able to find out the mental make-up of the pupil, whether he has in him more of the reflective or the artistic or the practical bent. If he is reflective, he must find out whether he has philosophic or scientific, mathematical or linguistic talents ; if he is artistic, he must discover whether he has taste for literature or music, painting or sculpture ; if he is practical minded, he must notice whether he is a great experimenter or is mechanically minded. These varying tendencies can be discovered at the Secondary School stage and if proper guidance is provided, much wastage at the later stages will be avoided. Secondary Schools are expected to offer many different kinds of vocational training.

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[1] X.112.

It is wrong to think that the more intelligent go to the universities and the less intelligent to technical schools. Success in a technical school requires as high an intelligence as success in a purely literary or scientific course. It may be of a different kind even as pupils are of different kinds, meditative or mechanical, scientific or artistic. Bookishness or the manipulation of concepts is not the only kind of intelligence. The new Secondary Schools should insist on the equal dignity and importance of the different courses they offer.

12. *Nature, Society and Spirit.*—There are three types of existence, which are inter-related, the natural, the social and the spiritual. The content of teaching may be classified under three heads, our relation to things or nature ; our relation to men or society ; our relation to values or the world of spirit.[1]

Nature.—Natural Sciences and technology come under this head. The desire to understand nature leads to science ; the desire to use knowledge of nature for definite ends gives us technology.

Every pupil should have a knowledge of the physical world in which he lives. It is, of course, not possible for every one to be a specialist in each of the sciences, but by the time he leaves college, every student, even if he is a student of humanities, should be familiar with the general principles governing his physical environment.

Instruction in the technological forces shaping the world is also essential. Technology is continually transforming our environment. All progress in industry from the Stone Age is but a record of the transformation of our environment by the triumphs of technology.

Society.—Every one should know something of the society in which he lives, the great forces that mould contemporary civilisation. History, economics, politics, social psychology, anthropology, belong to the group of social sciences. Whatever may be our specialised field, a general understanding of our social environment and of human institutions is essential.

Spirit.—The purpose of humanities is to enable man to understand his inner aspirations and ideals. The study of the language and the literature of our mother tongue should occupy the first place in general education. Language incarnates the genius of the people which has fashioned it. Every word, every phrase conveys some

[1] adhibhutam, adhyatmam adhidaivam. *Bhagavadgita*, Ch. VIII.

idea of men and women as they ploughed their fields, tended their homes, built their towns or sailed their ships. We get into the spirit of our people by acquiring control over the language.

Literature quickens and enlarges the human spirit. It appeals to the imagination of the child and imparts a sense of the inexhaustible richness of human personality and the immense complexity of human relationships.

Arts like music and painting help to educate our emotions and impart a certain grace in living. Men of taste will abhor ugliness, squalor and vulgarity.

Any course of education intended to prepare men and women for the business of living should include philosophical studies, which deal with conduct and the ends of life. However well-informed we may be in general knowledge, however technically efficient we may be in our special vocations, if we are not acquainted with the roots of our past, if we do not have an understanding of what is called the 'wisdom of the ages' our education falls short of its true ideals. It would indeed be very strange if we neglect philosophy, art and literature at a time when civilisation is in danger, not from any poverty of material resources or the power to use them but from want of the knowledge and the spirit to use them rightly. Our present condition is in part due to the failure of our education to cope with moral and spiritual uncertainties. Human values are not a part of nature in the sense in which stones and plants are and yet they can be studied scientifically. If intellectual fragmentation and anarchy are to be avoided, the student must acquire a frame of reference which will give meaning and direction to his college work as he moves from class to class to study different subjects. The different studies should be treated as parts of a whole. There must be an intellectual integration of his varied knowledge.

13. *Natural Sciences, Social Studies and Humanities.*—The divisions of subjects into sciences, social studies and humanities are not exclusive. It will be wrong to assume that science is amoral or indifferent to values. Science is not to be taught as something external to man. It is one of the greatest of the creations of the human spirit. It provides the material basis of the good life. Its aim is not only utility or success but the pursuit of truth. Its essence is careful observation of facts, rigid conscientiousness in inference and elimination of personal prejudice and passion. Its method is to follow the argument where it leads and its goal is to see things as they are. Its ideal is the same as that of philosophy, the vision of reality. Till recently scientific studies were treated as philosophical disciplines. Even now "Philosophical Transactions"

of the Royal Society deal with scientific investigations. Similarly when we study language, the relations of words to meanings, the construction of sentences, the method we adopt is that of science. Panini's work on Grammar (6th century B.C.) is unsurpassed as a scientific study of the facts of language.

Broadly speaking, the three divisions deal with facts, events and values. Their methods are different, though they are used in all studies in different degrees. While scrupulous attention to fact is the method of science, imaginative insight is also needed for scientific work. Mere heaping of data is not knowledge. In the realm of values, objective analysis of complex situations is necessary for proper appreciation. In history we need a judicious blend of factual observation and judgment. Whatever be our subject of study, we must be able to observe carefully, think effectively and use our judgment properly.

Any one who wishes to live intelligently in the modern world should have some knowledge of selected materials from the three fields of (1) Science and Technology (2) Social studies including History (3) Humanities including language and literature, fine arts ethics, philosophy and religion. Our education is incomplete if it is limited to the knowledge of the masterpieces of thought and imagination, ignoring altogether other expressions of the human spirit, the exact sciences. [1]

14. *Unity of Mind and Interdependence of Knowledge.*—If education is to guide the individual towards the comprehension of the art of life, it must energise his whole being and give him ideas of nature, society and values. Human mind is a unity and all knowledge is interdependent. In a sense every study should excite and satisfy the different mental powers. It must give the pupils intellectual vision, aesthetic enjoyment and practical power.

Education must look to the whole man. Karl Marx says:—" The education of the future will in the case of every child over a certain age, combine productive labour with education (unterricht) and

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[1] The list of subjects mentioned in the *Chāndogya Upanisad*, 8th Century B.C., includes literature, history, philosophy, religion, mathematics and astronomy, practical arts, military science.

rgvedam, yajurvedam, sāmavedam, ātharvadam, itihāsapurānam vedānām vedam pitryam, rāsim, daivam, nidhim, vākovakyam, ekāyanam, devavidyām, brahmavidyām, bhutavidyām ksatravidyām, naksatravidyām, sarpadevajanavidyām.

VII.1.

In the University of Taksasīlā (Taxila) which was famous even in the 7th century B. C. and attracted scholars from many parts of India and was known in Greece, the subjects taught included philosophy and literature, medicine and surgery, archery and military arts, agriculture and commerce. Special schools for grammar, law and astronomy, medicine and surgery were established by the fifth century B.C.

athletics (gymnastik) not merely as one of the methods of raising social production but as the only method of producing fully developed human beings. "[1] On this question of learning through doing Marx and Gandhi agree. Whether we are being introduced to the delights of literature, or the wonders of science, or the pride of craftsmanship, our whole being must be at work. Only then is education turned into joy triumphing over its weariness and pain.

While a general understanding of the scientific method, of the history of our society and the world and literature which feeds our imagination and stabilises our emotional life is to be regarded as a part of general education for all, professional education trains the students for competence in an occupation. Education has among others this double aim of preparing for a particular vocation and also for citizenship in a democratic community. These two ends are not exclusive of each other. If knowledge is power all education is both pure and professional.

The vocation may well require specialisation in humanities or social sciences. Professional education is different from general education, not so much in its subject matter as in its method, outlook and objective. To give a basic understanding of the principles of science, history and literature is the aim of the general course; to train experts in them is the aim of the specialised course.

15. *Mechanical Learning.*—The process of education becomes dull and boring if we are unable to interest the live minds of the students. What they learn unwillingly becomes dead knowledge which is worse than ignorance. Learning is an activity of thought. It is not stuffing the mind with facts. We must be able to use what we learn, test it, throw it into fresh combinations. It must become vibrant with power, radiant with light. [2]

16. *Inwardness of Freedom.*—There are not many to-day who hold that the concern of the college is primarily with the intellect and little, if at all, with the fashioning of character, the building of personality. While the conservation and advancement of learning is a dominant purpose of the universities, they should also aim at raising the personal quality of its members and make them seek the good life. A free society is composed of free citizens and men are not free simply because they are freed from external restraints. True freedom

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[1] *Das Kapital* 8th ed. (1928) I. 425 sadāsucih karuhastah ; which exalts the dignity of a manual worker who is held to be always pure.

[2] tejasvināv adhītam astu. Cp. Yāska's *Nirukta* (1·18) " The person who is able only to recite the Veda (adhitya) but does not understand its meaning is like a post or a mere bearer of a load. For the words that are simply memorised and not understood will merely ound when uttered, and not enlighten, just as wood, be it never so dry will not blaze if it is put into what is not fire ".

is inward, a function of mind and spirit. This inner fearlessness is the affirmation of human individuality. The recognition that a human being is a free moral agent with the right and capacity to choose between truth and error, good and evil, is the essence of freedom. We may make a wrong choice but true democracy concedes to us the right to choose wrongly.[1]

A human being lives in the world of nature but apprehends a world of values. We can break him on the wheel, burn him at the stake, bury him alive in a concentration camp or crucify him, but we cannot make him lie or steal or betray the cause he believes in. Our education should encourage the development in its members of fearlessness of mind, strength of conscience and integrity of purpose. If human life is to remain human, it must deepen and live by a sense of moral obligation. Without moral freedom there can be no true democracy. Freedom and justice in the world depend on there being enough men and women who say " We will obey God rather than men ". For the sake of the soul we may sometimes have to abandon the world.[2]

Plato says in his *Apology* : " A man who is good for anything ought not to calculate the chance of living and dying ; he ought only to consider whether in doing anything he is doing right or wrong—acting the part of a good man or a bad ".[3] The period of studentship, *brahmacharya*, was looked upon in India, as a time of learning and discipline. It is a way of life, of spirit. In the Christian Gospel we are warned not to be afraid of them that kill the body but are not able to kill the soul.

17. *Education as Initiation into a New Life.*—Education, according to the Indian tradition, is not merely a means to earning a living ; nor is it only a nursery of thought or a school for citizenship. It is initiation into the life of spirit, a training of human souls in the pursuit of truth and the practice of virtue. It is a second birth, *dvitiyam janma*.

18. *Inadequacy of Education as Adjustment to Society.*—It is of course true that we should mould students to a pattern that is sanctioned by the past if society is not to become discontinuous. Education is a means by which society perpetuates itself. In 1852 Newman defined the function of the university thus : " If a practical end must be assigned to a university course, then I say it is

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[1] " If all mankind minus one were of one opinion, and only one person were of the contrary opinion, mankind would be no more justified in silencing that one person, than he, if he had the power, would be justified in silencing mankind ", said J.S. Mill in his work on *LIBERTY*.

[2] atmarthe prthivim tyajet.

[3] 1.28.

training good members of society ".[1] No system of education could be directed to the weakening of the State that maintains it. But education is also an instrument for social change. It should not be its aim merely to enable us to adjust ourselves to the social environment. We must train people not merely to be citizens but also to be individuals. Many systems of education tend to transform the individual, who might otherwise seek to rise above the type, into the representative of the community. On such a scheme we cannot get leaders, who with new values transform the community. There is no stimulus to individuality, to being in any respect distinct or different from one's surroundings. The aim of education should be to break ground for new values and make them possible.

19. *Flexibility of the Educational System.*—The institutions of democracy must be flexible, capable of adaptation to the changing needs and conditions of men. We must make modifications whenever we feel that changes are necessary to realise more effectively the ends of individual development and social welfare.

Educational systems are built for a time and not for all time. There are no changeless ways of educating human nature. A curriculum which had vitality in the Vedic period or the Renaissance cannot continue unaltered in the 20th Century. Realising that the vision of free men in a free society is the living faith and inspiring guide of democratic institutions, we must move towards that goal adapting wisely and well to changing conditions.

III.—Justice.

20. *Social Justice.*—Even as we cannot break up the human person into separate mental faculties, we cannot separate the individual from society. Social justice is the foundation of States and it demands that we create a society which is freed from the evils which it is within human power to banish. If all men are entitled to an equal chance to be free from want, fear and ignorance, we cannot sit quiet and contented when millions of our fellowmen continue to live in poverty, disease, hunger and ignorance. If we are to demonstrate, not by words, but by deeds, that the democratic way of life is superior to the totalitarian, we must raise the material standards of life and increase national productivity by the larger use of scientific discoveries and technical applications. After the October Revolution of 1917, Soviet Russia wiped out illiteracy, raised the educational level of the masses, built and equipped scientific institutes and laboratories and transformed the country with new industries and a new type of agriculture.

[1] *The Scope and Nature of University Education.* Discourse 6.

21. *The Present Needs.*—There is great disparity between what our country requires and what our education offers. We produce a large number of arts and law graduates, but not enough teachers, administrators, doctors, engineers, technicians, scientific researchers and the like. On account of their expensive character we have neglected the scientific and technical courses.

22. *Agricultural Education.*—The vast majority of our people are engaged in agriculture and our position in regard to food production is pathetic. While Great Britain which is highly industrialised has attempted progressively to reduce her imports of food from overseas and increase her own food production, India where 70 per cent of the people are engaged in agriculture imported 1½ million tons of food grains in 1946, 2 million tons in 1947, 3 million tons in 1948 and threatens to import 4½ million tons in 1949 at a cost of 200 crores of rupees. While we with 70 per cent of our population working on farms are unable to produce enough food even at the subsistence level for our population, the United States of America of whose working population only 13 per cent work on farms, provides food at a high level not only for her entire population but for a large part of the rest of the world. The output of rice per acre in India is about 1,000 lbs. only as against 2,500 lbs. in China and 3,000 lbs. in Japan. What is possible in China and Japan must be possible in India. We have neglected the country-side, disrupted the village communities and destroyed rural initiative. If we wish to increase our food production, we must train the farmers and utilise the results of scientific research in agriculture in the fields.

23. *Technological Education.*—Our leaders have drawn up ambitious plans for the industrialisation of our country involving expenditure of crores of rupees. They wish to improve communications, develop systems of irrigation, distribute electricity to the villages. They have large schemes for the improvement of health and sanitation. If these schemes are to be realised, we have to increase the number of professional colleges, agricultural, medical and engineering to produce the requisite number of graduates and set up throughout the country technical schools which will supply the much larger number of technicians needed for the purpose. For a fuller realisation of the democratic principles of justice and freedom for all, we need growth in science and technology. The presence of the suffering millions, tired, discontented, mentally inefficient is a challenge to us. Where human action can remove the evils, inaction has the guilt of vice.

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24. *Rural Development.*—The industrialisation of the country should take into account the fact that the large majority of our people live in villages. As far back as 1830 Sir Charles Metcalfe wrote about the village communities in these words : "They seem to last where nothing else lasts. The union of the village communities, each one forming a separate little state in itself, has, I conceive, contributed more than any other cause to the preservation of the people of India through all revolutions and changes which they have suffered, and it is in a high degree conducive to their happiness and to the enjoyment of a great portion of freedom and independence. I wish, therefore, that village constitutions may never be disturbed and I dread everything that has a tendency to break them up". They have been broken up. We have to revive them to-day and make them, as far as possible, self-sustaining. Cottage industries and small co-operatives require to be developed and machines to lighten the labours of men living in cottages. "If we could have electricity in every village home, I shall not mind villagers plying their implements and tools with electricity" said Gandhi.

We need heavy large scale industries for power, mining, metallurgy, oil, machinery and machine tools, automobiles, locomotives, ship-building, aircraft, heavy chemicals, pharmaceuticals. These are to be located by the State in centres selected for the availability of raw materials and local labour conditions. Our economy must be a decentralised one supported by agriculture and village industries, supplemented by the necessary large-scale industries which are worked, not for the profit of a few industrialists but for the general welfare.

25. *The Place of the Machine.*—The machine should be treated as a natural accessory to man's social development. It is the tool of the free individual and not his master. It must not become the servant of powerful self-seeking individuals and groups. Under proper control and an equitable system of distribution, it can supply the basic needs of food, shelter and clothing to every individual and release him from the burden of life for his own proper function of relating himself to his source, to his fellowmen, and to the forces of his natural environment.

26. *Defects of Exclusively Scientific and Technical Education.*—Now that scientific discoveries and technological applications have altered our physical environment profoundly in the space of a few generations, our social habits and institutions require to be readjusted. We have grown strong in the mastery of the physical world but are very weak in our ability to manage and direct the social forces that shape our lives. It is a false belief that scientific pre-eminence is the only basis of national security and welfare.

27. *Need for Social Studies and Research.*—To impart correct social vision is an essential part of true education. While graduates in law, medicine and engineering acquire specialised information and technical skill, they should also be inspired by high social aims as no groups can pursue their private ends without regard to the social consequences of their activities. We do not work in a social vacuum. No man should expect to benefit from social order and progress without contributing to it. Individual freedom entails social responsibility.

Our students must be educated in the ethical values and the concept of human relations on which our political system rests, in the structure and processes of government. They must learn to know the imperfections of actual procedures and institutions through which government works. We must widen and deepen their social conscience and indicate how, though reason is set up as the final arbiter in human relations, the appeal to emotion and prejudice is more common among us than the appeal to reason.

We should not be tempted by the prestige of natural sciences and their immediately tangible results to give them a disproportionate place in our teaching programmes and research budgets. There is at least as much research to be undertaken in the social sciences as in the natural sciences. The pattern of inquiry and the canons of validity in social studies are somewhat different from those employed in natural sciences. The warning against the insistence on the same standards of precision in all fields is as old as Aristotle. "Discussion will be adequate if it has as much clearness as the subject matter admits of, for precision is not to be sought for alike in all discussions. It is the mark of an educated man to look for precision in each class of things just so far as the nature of the subject admits; it is evidently equally foolish to accept probable reasoning from a mathematician and to demand from a rhetorician scientific proofs."[1] We cannot expect more exactness than the subject permits.

28. *Training for Leadership.*—Training for leadership in the professions and in public life is one of the central aims of university education, which it is difficult to realise. President Truman remarked: "Our national policies must be administered by men of broad experience, mature outlook and sound judgment. But there is a critical shortage of such men—men who possess the capacity to deal with affairs of State". He went on—"We have been much less successful in obtaining persons with broad understanding and an aptitude for management. We need men who can turn a group of specialists into a working team and who can combine imagination

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[1] *Nichomachean Ethics*, Ross E.T.

and practicability into a sound public programme. Men trained for this kind of administrative and political leadership are rare indeed ".[1]

If it is the function of universities to train men and women for wise leadership, they must enable young men and women to read with insight the records of human experience as they are expressed in world's literature, to know the nature and consequences of ethical values, to sense the meaning of the social forces operating in the world to-day and comprehend the complexities and intricacies of life in all its immensity, physical, social and spiritual. Sciences supply us with the tools of civilisation but the guidance for their use does not come from them. Our obsession with the temporal, our passion for ever increasing velocity of movement require to be tempered by attention to the world of values, the ' unchanging forms ' of Plato.

We are building a civilisation, not a factory or a workshop. The quality of a civilisation depends not on the material equipment or the political machinery but on the character of men. The major task of education is the improvement of character.

Education must carry out at appropriate levels a combination of general, scientific, artistic and technical education for students of varying abilities and occupational objectives.

IV.—Liberty.

29. *University Autonomy.*—Freedom of individual development is the basis of democracy. Exclusive control of education by the State has been an important factor in facilitating the maintenance of totalitarian tyrannies. In such States institutions of higher learning controlled and managed by governmental agencies act like mercenaries, promote the political purposes of the State, make them acceptable to an increasing number of their populations and supply them with the weapons they need. We must resist, in the interests of our own democracy, the trend towards the governmental domination of the educational process.

Higher education is, undoubtedly, an obligation of the State but State aid is not to be confused with State control over academic policies and practices. Intellectual progress demands the maintenance of the spirit of free inquiry. The pursuit and practice of truth regardless of consequences has been the ambition of universities. Their prayer is that of the dying Goethe : " More light " or that of Ajax in the mist " Light, though I perish in the light ".

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[1] Quoted in *Higher Education for American Democracy*, 1948 pp. 88-89

Professional integrity requires that teachers should be as free to speak on controversial issues as any other citizens of a free country. An atmosphere of freedom is essential for developing this 'morality of the mind'.

The respect in which the universities of Great Britain are held is due to the freedom from governmental interference which they enjoy constitutionally and actually. Our universities should be released from the control of politics.

30. *The Spirit of Science and Social Conservatism.*—The active principle of science is discovery and every new discovery involves modification of hitherto accepted knowledge and so has to overcome the inertia of what is already established. When we adopt the scientific method of thought, we demand that we reach conclusions from tested data only and our conclusions are tentative, since our data may be enlarged. Readiness for change marks the scientific attitude while resistance to change is normally the attitude of defenders of tradition. The general aversion to change common to all static societies is hostile to scientific progress.

31. *Liberal Education.*—All education is expected to be liberal. It should free us from the shackles of ignorance, prejudice and unfounded belief. If we are incapable of achieving the good life, it is due to faults in our inward being, to the darkness in us. The process of education is the slow conquering of this darkness. To lead us from darkness to light[1], to free us from every kind of domination except that of reason, is the aim of education.

V.—Equality.

32. *The Democratic Way of Life.*—Democracy as a way of life and not a mere political arrangement requires of its adherents a jealous regard not only for their own rights but equally for the similar rights of others. It is based on the principle of equal freedom and equal rights for all its members, regardless of race, religion, sex, occupation or economic status. Education is the great instrument of social emancipation by which a democracy establishes, maintains and protects the spirit of equality among its members.

33. *Freedom of Conscience.*—If we develop the social temper of democracy we will have confidence in one another. We will allow freedom of conscience to others as it is our faith that others like ourselves are competent to work out their own salvation.

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[1] *tamaso mā jyotir gamaya.*

34. *Equality of Opportunity.*—Equal opportunity does not mean identical opportunity for all. It means the equal availability of education for every qualified person. Our system must provide for every young person education to the extent that he can profit from it and of a character best designed to assure the maximum development of his nature. It must of course recognise differences of gifts and interests.

Article I of the *Universal Declaration of Human Rights* says: "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood".

Education confined to those who come from nobility, landed gentry or professional classes is suited to a society built on an economic and social hierarchy of classes. In a democratic society, the opportunity of learning must be open not only to an *elite* but to all those who have to carry the privilege and responsibility of citizenship. Education is a universal right, not a class privilege.

The educational attainments of our people are far below what is necessary either for effective individual living or for the satisfactory maintenance of society. For the great majority of our boys and girls the kind and amount of education they may hope to get depends not on their own abilities but on the economic status of their family or the accident of their birth. The earnings of a very large part of our population are so low that they find it difficult to have even the barest necessities of physical existence. Low family income together with the rising costs of education is an almost impossible barrier to college education for many young people. There is no relation, however, between the ability to profit from a college education and the ability to pay for it. Speaking of the mathematical genius, Ramanujan, Pandit Jawaharlal Nehru said in his *Discovery of India*: "Ramanujan's brief life and death are symbolic of conditions in India. Of our millions how few get education at all, how many live on the verge of starvation, of even those who get some education, how many have nothing to look forward to but a clerkship in some office on a pay that is usually far less than the unemployment dole in England? If life opened its gates to them and offered them food and healthy conditions of living and education and opportunities of growth, how many among these millions would be eminent scientists, educationists, technicians, industrialists, writers and artists, helping to build a new India and a new world?" We cannot let our potential human resources go undiscovered and undeveloped.

In distribution of educational opportunity there should be no caprice, prejudice, favouritism, special privilege, or other arbitrary action. In general each person should have educational opportunity of the kind and to the extent that is suited to his capacity and interest and which represents his fair share of the total educational resources. Application of this principle may be adjusted to the needs of society and to humane considerations. Should society need more technicians and fewer clerical workers, educational opportunity may be shifted accordingly. Exceptional ability is socially so valuable that it may be given exceptional opportunity. Special training for retarded persons may be justified by the need to make them self-sustaining and not a burden to society. Humane considerations may lead to special educational provisions for the blind and other handicapped persons. Wise administration of educational resources must rest on the integrity and judgment of the State.

35. *Economic Barriers.*—Owing to economic difficulties many young people are not getting the chance to which they are entitled and the nation is deprived of a large amount of potential leadership in science and scholarship, industry and commerce. If we are to give substance and actuality to the claim of equality we profess, we must devise a system in which qualified individuals are not prevented by economic barriers from attaining the kind of education for which they are suited by their aptitudes and interests.

The President's Commission on *Higher Education in America* "recommends that in publicly controlled institutions there be no tuition or other required fees for the thirteenth and fourteenth school years, irrespective of whether they are offered by a 2-year or a 4-year college ; and that fees above the fourteenth school year be reduced at the earliest possible moment to the level prevailing in 1939".[1] Conditions in India are much worse. If we are to enable even the poorest to obtain not merely some but the best education they are capable of, we must organise a large and generous system of scholarships which will provide a ladder from the bottom to the university along which any child can climb to the limit of his capacity. These scholarships should cover not only tuition costs but costs of board, lodge and other living needs.

36. *Communal Ratios.*—The principle of equality in regard to educational rights is set forth in Section 23 of the Constitution: "No minority whether based on religion, community or language shall be discriminated against in regard to the admission of any person belonging to such minority into any educational institution maintained by the State". Unfortunately in some Government, not University, Colleges in South India there is what is called a

[1] *Equalising and Expanding Individual Opportunity.*

"rationing of seats" among members of different communities.[1] The fundamental right is the right of the individual, not of the community. Every young man must have an equal chance with others to make the most of his abilities. To curtail the chance to learn for members of particular groups is inconsistent with the Fundamental Right. It would tend to increase the stratification of our society. To insist on quotas for communities would be to assume that the nation is composed of separate and self-sufficient groups, which is a negation of our national ideal and democratic principle. Discrimination practices generate tensions and the spiritual damage caused by them is not measurable. Education should not be used for creating or deepening the very inequalities which it is designed to prevent. Progress for the nation requires that access to higher education should be determined by the interest and ability of the student. There is much to be said for the suggestion that the information about caste and religion should not be asked for from candidates for admission to colleges and universities.

37 *Assistance to Backward Communities.*—We cannot banish social situations by democratic phrases. Our Constitution has abolished communal electorates, privileges and weightages for all except the scheduled castes. We are in great sympathy with the anxiety of these scheduled castes and backward communities to raise their cultural level. Their backwardness is the result of a long period of unequal opportunity and it should be remedied as speedily as possible. We must provide them with additional assistance which will enable them to give their children equal educational opportunities with others in the nation.

By expanding the facilities in the colleges and increasing their number, we will be able to move towards equalisation of educational opportunities. But to deny to the most talented members of the nation, Brahmin or non-Brahmin, Christian or Muslim, opportunities for self-development is not only unjust to them but is unfair to the nation which is deprived of high class professional ability and social competence. Besides, we live in a competitive world in which mind yields itself only to an ascendancy of mind.

[1] Government of Madas issued an order No. 1254-Education, dated 17th May, 1948 directing "that the following communal proportion be kept in view and be observed as far as possible in regard to admission in the Engineering College from the Academic year 1948-1949:—

Non-Brahmin (Hindus)	6 out of 14.
Backward Hindu Communities	2 out of 14.
Brahmins	2 out of 14.
Harijans	2 out of 14.
Anglo-Indian and Indian Christians	1 out of 14.
Muslims	1 out of 14".

In the present conditions of our society the needs of justice to the members of the scheduled castes and the communities declared to be backward by the government of the Province or the State can be met by reserving a certain proportion of the seats in any college maintained by the State for qualified students of these communities and throwing open the rest of the seats to members of all communities by open competition. The percentage of reservation shall not, however, exceed a third of the total number of seats. The principle of reservation may be adopted for a period of ten years.

VI.—Fraternity : National.

38. *Extra-Curricular Activities.*—Fraternity refers to the need for fraternal concord and good-will among the people of India and the world. It can be fostered in educational institutions among the members of different communities, if we do not emphasise differences of caste, community and religion. In the hostels and playgrounds and unions, students should be trained in the democratic way of life. The extra-curricular activities of the college provide avenues through which students could participate in making decisions and carrying on joint undertakings. Habits of mutual trust and co-operation and qualities of fair play, patience, disinterestedness, consideration for others, are acquired through practice. Students cannot learn these if the institutions are run on authoritarian lines. We cannot teach the lessons of freedom by the methods of servitude. Students should be encouraged to participate in the social and cultural activities, of the areas in which the colleges are situated so that they may become alive to the needs of the society in which they live

39. *Indiscipline.*—We hear a great deal today of indiscipline among students. The university has split into two groups. The world of teachers is separate from that of the students The students adopt a trade union attitude to the authorities. They have little respect for their teachers and little concern for academic standards. They are convinced that the teachers are less informed than they about the illness of the society in which we live. A restless youth, discontented with its older generation, conscious of talents and cramped by lack of opportunity, which draws simultaneously towards and away from the Indian pattern of life, eager, thoughtful, suspicious, requires to be treated with understanding by the colleges and the universities. The teacher who shows in the class room or outside any interest in the problems which are alive for the student has a following. The young people are in desperate need of

assistance. Out of the mass of individuals who have enrolled in a college, we have to build a community. The university surroundings do not provide adequate opportunities for corporate life.

40. *The Residential System.*—In ancient times the teacher and the pupil shared a common life. They shared the same simple food and life and in the process was established a close relation between the teacher and the pupils. Education was regarded as a co-operative enterprise. The imperceptible action of the teachers' character, devotion to learning and the spirit of dedication on the growing minds of the pupils was the most valuable part of any education. The teacher not only imparts instruction but transmits the power of spirit. Compulsory residence within college walls which is required in many universities of the world assumes this invaluable interaction between the matured character of the teacher and the still unformed mind of the pupils. The absence of this personal relationship is to no small extent responsible for the increasing indiscipline. Numbers swamp " humanity " and make education mechanical.

41. *College a Community Centre.*—The College should be a community centre and not merely a class room or a hotel. In the dormitories, in student government, in clubs and organisations, in the varied social, recreational, intellectual life of the college, there are unique opportunities for the practice of the democratic way of life. They should be regarded as an integral part of the educational programme. Members of the teaching staff may participate in them actively, not to dictate or supervise but to advise and help, to make available to youth their wide knowledge and mature experience.

42. *National Discipline.*—There has been in recent years, a deterioration of the moral fibre. Many of the students as well as teachers are lacking in moral purpose and integrity. Many of those in power are in the grip of greed, selfishness and hatred. In our visits to the colleges and the universities, we were impressed by the need for improvement in national character and discipline. Universities ought to be examples to the nation, in fair dealing and decent behaviour. Some of the universities, we regret to say, are not models of decency and dignity. We can suggest only improved machinery giving less scope for intrigue and rackets. But no improvement of machinery can do much without a change of spirit. University personnel must develop a greater sense of social responsibility for educational and national progress, a preference for quality over quantity. The teachers can do much to raise the tone of the universities. It is in educational institutions that we can train character, build personality, by the discipline of body, intelligence and will.

43. *The Need for Culture.*—What holds a society together and gives the individual balance and perspective, is the possession of culture. Culture is intellectual alertness, receptiveness to beauty, humane feeling, social enthusiasm.

As the result of the vast expansion of the area of knowledge and the diversification of its content, the aim of teaching has become almost exclusively specialisation. It is the normal feature in professional colleges. Even in colleges for liberal arts and sciences, the tendency is to specialise and prepare for advanced study in one or the other special field. If society is not to disintegrate into an aggregate of individual specialists, we should endow the youth with a central core of values, transmit to them a cultural heritage. It alone can serve as a cohesive force in a society which is getting splintered by over-specialisation. It will confer a unity and consistency of aim on specialised vocational courses and make for a more abundant personal life and a freer social order.

44. *The Un-Indian Character of Education.*—One of the serious complaints against the system of education which has prevailed in this country for over a century is that it neglected India's past, that it did not provide the Indian students with a knowledge of their own culture. It has produced in some cases the feeling that we are without roots ; in others, what is worse, that our roots bind us to a world very different from that which surrounds us.

A British historian of Indian education observes :—" Our education has done far less for Indian Culture than for the material and political progress of India. She looks to our Schools and Colleges for equipment in the struggle for existence ; for the secret of happy living, *vivendi causae*, she looks elsewhere"[1].

45. *Cultural Unity of India.*—Nations are not made chiefly by traders and politicians. They are made by artists and thinkers, saints and philosophers. National unity and progress require a deeper foundation than political and economic arrangements. It is the life of spirit that has shaped and unified our collective existence and has been the real bond of oneness among the Indian people. After centuries of stress and conflict India has gradually evolved a common civilisation, a collective consciousness which embraces wide varieties of temperament, tradition, ways of thought and belief. Our people belong to different provinces, speak their own languages, preserve their own habits and customs. There are sharp differences of temper, tradition and dialect. Despite all these there is a fundamental unity which binds the people together as members of one society with the same cultural loyalties.

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[1] A Mayhew: *The Education of India* (1926) p. 4.

Indian culture is like a palimpsest in which new characters do not entirely efface the old. In a single social pattern fragments of different ages are brought together. It would be impossible to think of an India where no Moghuls ruled, where no Taj was built, where no Macaulay wrote his Minute on education. Indian culture is like a living organism growing in richness and content. Primitive cultures are marked by extreme conservatism when social groups follow the same path of custom and convention with irrational persistence. Living cultures are dynamic and maintain their cultural pattern by a continuous effort of individual and social discipline.

46. *Conflict in India's Soul.*—Two contradictory impulses have attracted Indian intellectuals. One is a jealous pride in Indian genius and tradition wholly distinct from those of the West. The other is the no less jealous desire to profit by the example of the West.

A revolutionary period is not generally inclined to respect the wisdom of the past, but to cultivate this disrespect would be to forego our spiritual heritage. There are treasures of spirit which may not be of any conceivable use in the struggle for material comfort, but if we are to be qualified to assist or resist the dominant tendencies of our age, we cannot afford to ignore the standards and ideals built by the austerity and abnegation of our ancestors across the centuries. The chief source of spiritual nourishment for any people must be its own past perpetually rediscovered and renewed. A society without a knowledge of the past which has made it would be lacking in depth and dignity.

47. *Critical Study of the Past.*—This is not to romanticise the past filling the gaps of memory from the resources of imagination. India has suffered on account of her great weaknesses, her spirit of reaction and narrow-mindedness. We must be critical and selective and use the past to illumine the present. We should not blindly give up the great values of our past nor should we cling to beliefs simply because they are ancient.[1] We should accept so much of ancient thought as is sympathetic to us.

Even in the darkest days of degradation, the light of India's culture never failed. It may have flickered but it was never extinguished. There were loving hands which cherished and tended it. To-day it is burning with a renewed glow. If it is to become a consuming flame, we must become aware of its past greatness and its contemporary value.

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[1] Cf. *Kālidasa : purānam ity eva na sādhu sarvam na cāpi kāvyam navam ity avadyam.*

VII.—Uninterrupted Continuity of Indian Culture.

48. *The Indus Valley Civilisation.*—From the prehistoric civilisation of the Indus Valley brought to light by the excavations at Harappa and Mohenjo-daro to our own time it is a span in all probability of nearly five to six thousand years[1]. Sir John Marshall tells us that these excavations provide us with evidence of the presence in India of a highly developed culture that 'must have had a long antecedent history on the soil of India, taking us back to an age that can only be dimly surmised'. Professor Childe writes: 'India confronts Egypt and Babylonia by the third millennium; with a thoroughly individual and independent civilisation of her own technically the peer of the rest. And plainly it is deeply rooted in the Indian soil'. He continues: 'it has endured; it is already specifically Indian, and forms the basis of modern Indian culture'.[2]

49. *The Vedic Period.*—The Vedic period on a most cautious estimate covers the stretch between 1500 to 600 B.C. The Rg Veda is older than Homer or the Old Testament. The concluding parts of the Veda, the Upanisads which are the sources of the Vedānta, antedate the Orphic and the Eleusinian mysteries, Pythagoras and Plato. The first connections of things are understood by the seers of the Rg Veda. They believe in a truth, a law which governs our existence, which sustains the different levels of our being, an infinite reality, *ekam sat*, of which all the different deities are but forms.

In Mittāni (Asia Minor) we have cuneiform inscriptions (fourteenth century B. C.) mentioning the Vedic deities Indra, Mitra, Varuna and Asvins. Xerxes is reported to have destroyed a temple at Media where people adored gods with Vedic names like Indra and Sarva. The kinship of the Vedic and the Avestan beliefs is now accepted, and the Iranians and Indians had lived together or in close proxmity from remote antiquity. The truths suggested in the Vedas are developed in the Upanisads. They are the source of the various philosophies and religions which have developed in India. Their influence can be traced in the thought of Pythagoras and Plato. In the Upanisads we find formulated the distinction between Absolute spirit and personal God, between the ultimate truth of the eternal and the

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[1] *Mohenjo-daro and the Indus Civilisation (1931) Volume I, p. 106.*

[2] *New Light on the Most Ancient East* (1934), p. 220. "About the Indus Valley or Mohenjodaro civilisation of around 3000 B.C.", A.L. Kroeber says, 'we cannot yet say whether its recently discovered remains represent a peak or a level, nor whether they characterise only the North West Frontier or a larger part of India'. '*Configurations of Culture Growth*', (1944), page 688.

relative truth of mortal existence. They trace the lines of the inward growth of man from the physical to the spiritual mode of existence. They give us techniques for spiritual realisation which are flexible and continuous and discourage claims for the monopoly of truth. On the principle of live and let live, they give full freedom to seekers to get to their goal in their own ways.

50. *Buddhism.*—The sixth century B. C. is a period of great awakening the world over; Confucius in China, Pythagoras in Greece, and the Buddha in India belong to it. The Buddha's doctrine is a restatement of the truths of the Upanisads with a new emphasis. Asoka's missions spread Buddhism in East and West including Syria and Palestine.

51. *Indian Influence Abroad.*—The spread of Buddhism in the centuries before the Christian era and in the early centuries of it in the East, in Tibet, Burma, Nepal, Cambodia, Annam, China, Japan, without spilling a drop of blood is well-known. Its appeal to the modern mind is remarkable.

From the third century B.C. there were conquests of culture in the regions of Indo-China and Indonesia and familiar Indian names like Campā, Kāmbhojā, Amarāvati, names which we find in the Buddhist texts, were given to the places in Indian colonies even as European names like Boston, Cambridge, Berlin are taken over by settlers in America from their European homelands. Brahmanical and Buddhist faiths prevailed in this Farther India and came to terms with each other as in India. Harsa, the last great ruler of Northern India (A.D. 606-647) dedicated temples to Siva and the Buddha.

52. *South Indian Teachers.*—About and after the eighth century the teachers of South India, Samkara, Rāmānuja Madhva, effected a cultural union between the North and the South, between the Aryan and the Dravidian, and laid the foundations of Indian national unity.

53. *The Spread of Islam.*—When Islam spread in the land, theistic developments became more prominent in the doctrines of Rāmānanda, and Kabir, Rāmdās, Dādu, Tukārām and Tulsidāṣ, Nānak and Caitanya. Attempts at the reconciliation of the two faiths were made not only by the spiritual leaders but by the emperor Akbar. In the sufism of Islam, of which Chishti, Baba Farid and Jami are illustrious representatives, we have a close approximation to the Vedānta philosophy.

From very ancient times India had intimate relations with the Arabs, especially in commerce and trade, and there were land and sea routes established between the two countries. The Muslims were welcomed in India by the Hindu rulers, who permitted them to build

mosques and spread their teachings. Indian culture did not believe in compelling people to choose its way of life. It encouraged each group that found its home in India to live by its own conception of the good life. A number of communities of mixed descent came into existence. When later Muslim invaders from outside attacked India, Indian Muslims fought side by side with the Hindus and resisted them. When these invaders settled down in India, there were frequent feuds and instances are not wanting of Hindus fighting under Muslim leadership and Muslims fighting under Hindu leadership. The Muslims of India spoke the Indian languages, belonged to the same racial stock, adopted the occupational groupings and, within each class, the Hindus and the Muslims were often indistinguishable as they are today, in dress and manners, in ways of thought and behaviour. With the advent of the Moghuls, the imperial court became the meeting ground of Hindu and Muslim scholars who made themselves familiar with each other's cultures. In the eleventh century, the great Muslim scholar, Alberuni, mastered the Sanskrit language and left us an impressive and critical account of the achievements of the Hindus in sciences and philosophy. India's spirit of comprehension and forbearance influenced the Moghuls and the cultural activities of India between the fourteenth and the nineteenth centuries illustrate Hindu-Muslim collaboration. In science and literature, music and architecture, in painting and dancing, there was a notable synthesis of Hindu and Muslim ideas.

54. *The Influence of Christianity.*—Christianity flourished in South India from the beginning of the Christian era. The early Christians looked upon themselves as an integral part of the general Hindu community and to-day the younger sections of the converted Christians regard themselves as the inheritors of the great Indian culture. Attempts to reconcile the inherited spiritual tradition of India with the acquired Christian doctrine on the lines of the reconciliation effected by the great scholastic thinkers between the Aristotelian tradition and Christian dogma are being made by the more enterprising of the Indian Christian leaders.

55. *Chief Tenets of Indian Culture.*—During all these centuries the people of India have evolved a culture and preserved it in an uninterrupted continuity. Its ideals are recognised not so much as superstitions but as living truths, capable of satisfying the spiritual needs of humanity. The figure of Siva, the great Yogi, has come down to us from nearly 3250 B. C. calling upon us to be kings not over others but over ourselves. Religion is not so much a revelation to be attained by faith as an effort to unveil the deepest layers of man's being and get into enduring contact with them. Belief and conduct, rites and ceremonies, authorities and dogma are subordinate to the

art of conscious self-discovery and contact with the divine. Their function is to aid the growth of spirit by supplying supports for a task that is strictly personal. He who has seen the real is lifted above all narrowness and is released from a multitude of opinions. The name by which we call God and the rites by which we approach him do not matter much. Toleration in the positive sense of an active appreciation of other faiths has been the characteristic of India's religious life. Toleration is the homage which the finite mind pays to the inexhaustibility of the Infinite.

The process of self-discovery is not the result of intellectual analysis but of the attainment of a human integrity reached by a complete mastery of self. This view is humanistic in a deep sense, for it tells us that there is something more in man than is apparent in his ordinary consciousnees, something which frames ideals and thoughts, a finer spiritual presence which makes him dissatisfied with mere earthly pursuits. This is our true being, which it is our business to discover and consciously become.

The soul that has found itself is no longer conscious of itself in its isolation. It is conscious rather of the universal self of which all individuals, races and nations are specific articulations. This secret solidarity of the human race cannot be abolished by the passing insanities of the world. Man belongs to the two orders of time and eternity. Life eternal consists in another kind of life in the midst of time. Human life is a rhythm with moments of contemplation and of action, of refreshment and restoration in the life of spirit, and of action with a sense of mission in the world. The test of authentic spiritual insight is an increased integration of the personal life, quickened sensibility, heightened power and universal love.

The greatness of a culture consists not in its permanence which is a relative term but in the qualities which it is able to contribute to human-growth in the way in which it is able to mould the hidden drama of history which is a perpetual struggle between the external environment and the inner values of man. Its vital character is tested by its capacity to evolve without surrendering its master plan, to adapt new material which enters into it, which, though not strictly conformable to its central pattern, is yet not in conflict with it.

VIII.—History of India.

56. *Study of the Past.*—No nation is healthy that parts company with its traditions. Social development is an organic process. The continuing influence of the past on the present cannot be ignored.

Our art and literature, our law and history, belong to the main stream of our culture. Every Indian student should get to know the main outlines of the history of India, which is not a mere chronicle of dates and defeats, of follies and failures. He should know the lives of the heroes who express the spirit of our civilisation, the seers of the Vedas, the Buddha and Samkara, Asoka and Akbar. A habitual vision of greatness is the way to cultural growth. Those who have not greatness in themselves—they are the vast majority—should live in the company of the great. Culture is an attitude of mind, an inclination of the spirit and those who yearn for it wish to have a vision of greatness, sit in the presence of nobility, see the highest reach and scope of the spirit of man.

57. *The Epics.*—If Indian people, in spite of widespread illiteracy, still retain certain traits of their culture, it is because their poetry and folklore, their Ramayana and Mahabharata, their art and architecture lifted the veil from the hidden beauty of the world.

The epics are rooted in India's culture but are not in any way fettered by it. They deal with problems of ethics and politics and are at the same time great literature. Their incidents and characters are known throughout India as also in Ceylon, South East Asia, Burma and Siam and the Indies. They are carved on the walls of Angkor and in the temples of Java and enacted in the shadow plays of Bali. They are not works of the past but through the translations in the several Indian languages are alive and active in the life of India. They are told in the homes, chanted in the temples and recited under the village tree. The grandmother tells them to the children, travelling minstrels present them in town and village, scholars interpret them, amateurs love to enact them. In these epics we see greatness in spiritual vision and moral teaching as well as in artistry of language and imaginative eloquence.

58. *Appeal of the Epics to the Youth.*—As these stories come out of the youth of the world, they appeal to all youth. When they are read imaginatively, with an appreciation of the living movement that lies behind them, we feel the intangible quality of our culture which eludes definition and a comradeship is established between the past and the present. The epic literature is a part of the tradition of our race.[1]

[1] *Cf* The words of Tagore : " To know my country, one has to travel to that age, when she realised her soul and thus transcended her physical boundaries, when she revealed her being in a radiant magnanimity which illumined the eastern horizon, making her recognised as their own by those in alien shores who were awakened into a surprise of life ; and not now when she has withdrawn herself into a narrow barrier of obscurity, into a miserly pride of exclusiveness, into a poverty of mind that dumbly revolves around itself, in an unmeaning repetition of a past that has lost its light, and has no message for the pilgrims of the future.'

If our childern are taught their language by means of these stories, they will have pleasure as well as illumination. They will catch something of their perfect sense of form as well as moral inspiration. There is a tendency to over-emphasise the significance of the rational argument. We cannot present ideals in abstract shape to the mass of mankind ; only through concrete illustrations can the ordinary man apprehend them in any real sense. These epics speak to us of the rights of the weak, the lust for power and its nemesis, the problem of reconciliation and atonement for wrong-doing, the triumph of a great victory, the sufferings of the vanquished, the debasement of the victors. If we are to work for a society of human beings as high as human nature allows, we must start with a vision of great and good men. That should be the centre of all education.

Even in college classes a study of these epics, which are a part of our intellectual inheritance, will form what is now called education by great books. We cannot measure the effect on the young minds of these classics, their profound thought, their sublime poetry, something absorbed rather than understood. Their study will broaden the horizons of our students, stabilise their emotions and make them less susceptible to the appeals of those who would like to take advantage of the bewilderment of the average man in the presence of violent changes he does not understand. When there is a great empty space in the souls of men, superstitions fill the void. Belief in absolute values seems to be a condition of life. One cannot too often recall the profound words of Pascal : " It is the nature of man to believe and to love ; if he has not the right objects for his belief and love, he will attach himself to wrong ones." Great literature enriches the life of contemplation, provides enduring satisfactions and inclines us to the good life.

59. *Living Cultures.*—Cultures are alive and healthy only when they are creative, only when they are responding to some new challenge, physical, social or spiritual. When we rest on our oars we stagnate. The decadent periods of Indian culture were those when we idolised our past achievements and lost the spirit of adventure. When the sources of creativity dried up, culture became barren. To-day we have to build a world of friendly, prosperous human beings. It can be done only by an extension of the spirit which has sustained India through all its vicissitudes. Sylvan Levi refers in vivid terms to the greatness of the Indian spirit in these words : " From Persia to the Chinese Sea, from the icy regions of Siberia to the islands of Java and Borneo, from Oceania to Socotra, India has propagated her beliefs, her tales and her civilisation. She has left indelible imprints on one-fourth of the human race in the course of a long succession of

centuries. She has the right to reclaim in universal history the rank that ignorance has refused her for a long time and to hold her place amongst the great nations summarising and symbolising the spirit of humanity ".

IX.—Fraternity : International

60. *World-mindedness and National Sentiments.*—Fraternity is to be reached at the national and the international levels.

A nation state is not the beginning and the end of political organisation, though it is an essential feature of modern life. The nationalist tradition has been strong because the colour of life, the fertility of mind, the originality in arts and adventures in ideas spring from the cultural individuality of peoples. It arises out of the natural feeling to believe that our country has a beauty all its own and of which it is intensely proud. We love the intimate familiar things of our own land, its hills and rivers, its plains and cities, its art and architecture, its native speech and faith. These things evoke echoes of earliest childhood and give us a warm feeling which we cannot acquire anywhere else. These existed long before there was such a thing as loyalty to a political state and will survive after they have ceased to have any political meaning.

61. *Cultural Co-operation.*—Great philosophical developments like great civilisations, seem often to come about through the clash of different cultures. The setting for the development of a world culture through the cross-fertilisation of cultures is ready. The world has become, through the speed of transportation and communication and economic interdependence, a single body. We must secure recognition and acceptance of the oneness of the world in the thinking of the people. Growth in mutual understanding arises from the recognition that the different cultures are dialects of the one language of the spirit.

If the democratic spirit is deep and strong, it will express itself in every phase of living, personal and social, economic and political, international and inter-religious. If the essence of democracy is an active regard for the rights and freedom of others, it cannot stop short at national, racial or religious boundaries. It must develop intercultural understanding and co-operation. A blind loyalty to one way of life is not a democratic attitude. It is unreasoning and self-righteous. If we accept the interdependence as well as the individuality of all men, we must develop a sensitivity to the hopes and fears, needs and emotions of human beings everywhere.

62. *Provincialism.*—Our thinking still bears marks of provincialism. We still tend to see other peoples with suspicion and distrust or dismiss them as inferior and backward because they are different from ourselves. To regard one's own country as the centre of the universe, to view all things solely in relationship to this fixed point is primitive and outmoded. The advice of Comenius, given three centuries before the Second World War, in 1643, has not lost its force : " There is needed in this century ", he said " an immediate remedy for the frenzy which has seized many men and is driving them in their madness to their mutual destruction. For we witness throughout the world disastrous and destructive flames of discords and wars devastating kingdoms and peoples with such persistence that all men seem to have conspired for their mutual ruin which will end only with the destruction of themselves and the universe. Nothing is, therefore, more necessary for the stability of the world, if it is not to perish completely, than some universal rededication of minds. Universal harmony and peace must be secured for the whole human race. By peace and harmony, however,. I mean not that external peace between rulers and peoples among themselves, but an internal peace of minds inspired by a system of ideas and feelings. If this could be attained the human race has a possession of great promise "[1]. We must learn to admit the possible worth of human values and ways of living which we ourselves do not accept. To a narrowly provincial mind cultural differences are irritating but to a liberal sensitive mind they are greatly rewarding.

63. *Larger Patriotism.*—World Union is not a threat to the deep loyalty we feel for our own country. The wider patriotism does not supersede but embraces the narrower patriotisms. To draw the various nations into a closer union, we need not sacrifice our national loyalties but acquire a new loyalty to the world community of which we are all members. Within a united world there will be room for a wide diversity. World union will mean not the impoverishment but the enrichment of the world.

64. *UNESCO.*—The United Nations Educational Scientific and Cultural Organisation states in its preamble the declaration that wars begin in the minds of men and it is in the minds of men that the defences of peace must be constructed. However much the political and economic arrangements of governments may contribute to world-union, peace must be founded on the intellectual and moral solidarity of mankind. If nations are to survive in the world, where the spread of science and technology is acting as the solvent

[1] See I. L. Kandel : " *John Amos Comenius, Citizen of the World School and Society,* " April 1942.

of cultures, nations cannot remain separated from one another by the barriers of prejudice and ignorance. The desire to know one another is not a matter of scientific curiosity but a political necessity. The institutional arrangements devised by the United Nations will have to be built upon an understanding among peoples, an understanding that embraces cultural differences, ethical values, religious faiths and patterns of sentiment and feeling. A world society of free men becomes possible when we become international-minded.

65. *Positive Peace.*—Peace is not the absence of armed conflict. It is the positive establishment of just and humane relationships among the peoples of the world, the development of mutual confidence among nations. Universities can make a significant contribution to world peace. As their very name implies, universities are suited for fostering an active appreciation and understanding of other cultures. In the world of letters, science, art, music, there have been no effective national boundaries. The citizens of that world are peoples of all nations for whom words and equations, images and sounds have meaning. Through the work of the universities we can widen the citizenship in this world republic of arts and science. This is the task of the UNESCO which attempts to give a soul and a conscience to the United Nations which are the body-politic of the new world. Modern man cannot regard himself as an Indian or a Chinese, or a European or an American. He is the heir to the world's culture.[1]

In different parts of the world man attempted to rise above mere humanity towards some higher kind of spiritual life. Here and there a few transfigured men and women achieved this goal of civilisation but we have not had a civilised society. It cannot be based on nationalism which is but a local interest in our present age. The truly civilised men are citizens of the world. Life and not merely the life of our race, our religion, or our nation, demands their devotion. The happiness of the human race is of more import to them than the triumph of their nation.

66. *World Citizenship.*—A programme of education for world citizenship should be made a part of every person's general education. Universities must make provision for the study of the different aspects of international affairs, such as the nature and development of

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[1] Professor Arnold Toynbee observes : " Our own descendants are not going to be just Western, like ourselves. They are going to be heirs of Confucius and Lao-Tse as well as Socrates, Plato and Plotinus ; heirs of Gautama Buddha as well as Deutero-Isaiah and Jesus Christ, heirs of Zarathustra and Mohammad as well as Elizah and Elisha and Peter and Paul, heirs of Samkara and Ramanuja as well as Clement and Origen ; heirs of the Cappadocian Fathers of the Orthodox Church as well as our African Augustine and our Umbrian Benedict, heirs of Khaldun as well as Bossuet and heirs (if still wallowing, in the Serbonian Bog of politics) of Lenin and Gandhi and Sun Yat Sen as well as Cromwell and George Washington and Mazzini."

other civilisations and cultures, nationalism in its relation to internationalism, tensions leading to wars, structure and operation of the various world organisations designed to further international security and the peaceful solution of international problems.

67. *Summary.*—Democracy depends for its very life on a high standard of general, vocational and professional education. Dissemination of learning, incessant search for new knowledge, unceasing effort to plumb the meaning of life, provision for professional education to satisfy the occupational needs of our society are the vital tasks of higher education.

There must be a sufficient unity of purpose in all this diversity to produce a community of values and ideas among educated men. Our policies and programmes must be brought into line with the social purposes which we profess to serve. We may use various institutional forms as time and circumstances may require but we must be steadfastly loyal to the abiding elements of respect for human personality, freedom of belief and expression for all citizens, a deep obligation to promote human well-being, faith in reason and humanity.

The greatness of a country does not depend on the extent of its territory, the length of its communications or the amount of its wealth, not even on widespread education or equitable distribution of wealth, important as all these things are. If we wish to bring about a savage upheaval in our society, a raksasa raj, all that we need to do is to give vocational and technical education and starve the spirit. We will have a number of scientists without conscience, technicians without taste who find a void within themselves, a moral vacuum and a desperate need to substitute something, anything, for their lost endeavour and purpose. Society will then get what it deserves. If we claim to be civilised, we must develop thought for the poor and the suffering, chivalrous regard and respect for women, faith in human brotherhood regardless of race or colour, nation or religion, love of peace and freedom, abhorrence of cruelty and ceaseless devotion to the claims of justice.

We cannot preserve real freedom unless we preserve the values of democracy, justice and liberty, equality and fraternity. It is the ideal towards which we should work though we may be modest in planning our hopes as to the results which in the near future are likely to be achieved. "Utopias are sweet dreams", wrote Kant, "but to strive

relentlessly toward them is the duty of the citizen and of the statesman as well ". Universities must stand for these ideal causes which can never be lost so long as men seek wisdom and follow righteousness.

Our Constitution lays down the general purposes of our State. If we are to make the understanding and vision of our farsighted and sensitive leaders who framed the Constitution the common possession of all our people, our universities must educate on the right lines and provide proper facilities for educating a larger number of people. If we do not have the necessary intelligence and ability to work out these purposes, we must get them through the universities. What we need is the awareness of the urgency of the task, the will and the courage to tackle it and a whole-hearted commitment of this ancient and yet new people to its successful performance.

CHAPTER III

Teaching Staff : Universities and Colleges

I.—Present Status and Salaries.

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I.—Present Status and Salaries.

1. *The Importance of the Teacher and his Responsibility.*—The success of the educational process depends so much on the character and ability of the teacher that in any plan of university reform the main concern must be for securing an adequate staff with qualifications necessary for the discharge of its many-sided duties. Elsewhere in this report we have discussed the aims and objectives of university teaching. Briefly stated they are :—

(1) transmission of the intellectual and ethical heritage of humanity to the young ;

(2) enrichment of this heritage and extension of the boundaries of knowledge ;

(3) development of personality.

The primary responsibility of the teacher is to arouse the interest of the pupil in the field of study for which he is responsible. He has not merely to convey factual information and the principles and generalisations which accrue from them, he has to stimulate the spirit of enquiry and of criticism, so that minds may acquire the habit of exercising independent and unbiassed judgement, and learn to discriminate between adequate and inadequate, relevant and irrelevant data, and to avoid the extremes of haste and indecision in arriving at conclusions.

No teacher who is not a master of the field, who is not in touch with the latest developments in his subject and who does not bring to bear upon his duties a free and untrammelled mind will ever succeed in inspiring youth with that love of truth which is the principal object of all higher education.

Nor is the mastery of a subject possible without a seeking for more knowledge, for knowledge is never complete and is always advancing. And a teacher who is not a fellow traveller in this exciting pursuit, and who stands merely watching others, misses the thrill of adventure which is so potent a stimulus of thought. Research or quest for new knowledge is not merely an additional casual activity of a University teacher which he may if he so chooses omit, it is an essential part of his function and may be neglected only at the peril of intellectual stagnation. Research implies an enquiring attitude of mind. In the university which is the laboratory of thought no one is fitted to work whose mind has ceased to wonder and whose intellect has stopped from questioning.

The teacher is also the bearer of the traditions and ideals which constitute the ethos of a society. Nor is it possible to make any real distinction between intellectual and moral virtues. Integrity, judgement, objectivity, subordination of the immediate and ephemeral to the rational and permanent are common to both. The growth of reason is the aim of higher education and for this moral and intellectual developments must strengthen each other. A good teacher desiring to achieve results in the intellectual field must inevitably instil into his pupils respect for right values, for truth, and inculcate habits and modes of behaviour through which their life may be moulded to their realization. It is a difficult task but inescapable if Indian democracy is to live, and if Indian independence is to continue.

From all this it follows that the right kind of teacher is one who possesses a vivid awareness of his mission. He not only loves his subject, he loves also those whom he teaches. His success will be measured not in terms of percentage of passes alone, nor even by the quantity of original contributions to knowledge—important as they are, but equally through the quality of life and character of men and women whom he has taught.

2. *The Present Unsatisfactory Position.*—These are exacting demands, but we have no doubt the teachers themselves will recognize that they are inherent to their calling. Unfortunately the position today is far from satisfactory. The evidence from the universities points to great dissatisfaction with the existing conditions and deep

concern over its consequences. All those interested in education deplore the deterioration of standards of teaching and of discipline. Many have testified to the great respect which the teachers of the preceding generations commanded and the indifference with which they are treated today. Complaints of lack of freshness and enthusiasm abound. Quite a number of teachers are satisfied with repeating stereotyped information, which tends to devitalise teaching and to kill interest. In one of the Indian Administrative Service examinations, one examiner in a Science subject wrote, " the answers of many of the candidates were antiquated and obsolete—they were writing in 1948 what they might have written in 1918—they had completely ignored the advance in our knowledge of the subject during the last 30 years. It is likely that their teachers failed to bring the recent advances in our knowledge to the notice of their students. The matter becomes serious when we know that these advances are duly recorded in current modern text-books. " This is a serious indictment, but is unfortunately true of far too many.

3. *The Danger of Teacher-Politicians.*—With the introduction of democratic control and of elections in our universities there has grown a tendency among teachers to interest themselves more in the administrative affairs of the university than in their legitimate duties. We were told that in several cases teacher-politicians have succeeded better in their careers than teachers who have devoted themselves to teaching and scholarship. The success of teacher-politicians who manipulate elections and get for themselves and their friends influential and lucrative positions in their own or sister universities is largely responsible for the deterioration of the morals of teachers and of the academic standards of the universities.

4. *Lack of Adequate Finances.*—On the other hand the universities complain of general neglect. They suffer from lack of adequate financial support from Governments and the public. Their libraries and laboratories are insufficient and ill-equipped and afford little scope for scholarship and research. Without up-to-date books and journals the teachers cannot keep step with the advance of knowledge, and without apparatus and research facilities either they play with insignificant investigations or lose heart and abandon research.

5. *Low Salaries of Teachers.*—Then the universities are finding it hard to retain their best teachers. The good old times when the profession of teaching attracted those whom no worldly rewards could tempt are no more. In this age of money economy and profit motives it is vain to expect that teachers alone would rise above the spirit of the times. Salaries which the universities cannot command but industry and governments easily

offer are taking the cream away leaving the staffs poorer, envious and discontented.

It is not surprising that Indian universities have failed to produce in adequate numbers teachers commanding fame and respect or investigators who have won international recognition. A few have indeed achieved eminence, but the fact remains that the average teacher does not enjoy a high reputation.

6. *Resulting Demoralization.*—An unfortunate development of recent years is that the teacher has to a large extent lost the confidence of his pupils. During the period of the national struggle for independence educational institutions became centres of agitation, and naturally young minds were excited and inflamed. While youth yearned to throw itself into the noise and bustle of strife, the teacher was torn between opposing ideals—his duty towards the youth as an educator and his sympathy with the cause of national liberation. His hesitance was interpreted as lack of patriotic fervour both by political leaders and his students. He lost grace and what is worse faith in himself. He made little effort to retain his influence over the young and eventually came to believe in his inability to do so.

All this must pass away if the university is to play its proper role in the life of the nation. The factors which are responsible for the demoralisation and denigration of the teacher must be removed and a healthy atmosphere restored. For the teacher is the corner stone of the arch of education, he is no less if not more than books and curricula, buildings and equipment, administration and the rest.

II.—Classification of Teachers.

7. *Four Classes of Teachers.*—It is in this context that the problems of staffing the universities have to be considered. The first among them is that of the classification of university teachers. At present there are in most Indian universities three classes of teachers, *viz.*,

(*i*) Professors or University Professors.

(*ii*) Readers or Professors.

(*iii*) Lecturers or Assistant Professors.

Besides many universities have below these grades Junior Lecturers or Lecturers of B grade and Demonstrators.

Though this classification is well defined in the universities, in the colleges affiliated to universities the distinction is blurred and the title of Professor is used rather indiscriminately. This practice ought to be discontinued and the different grades of teachers should

be fixed on the basis of qualifications, experience and responsibility. In most countries of the world there is an ordered heirarchy in the universities. In the United States of America, for instance, there are four classes of teachers—Professors, Associate Professors, Assistant Professors and Instructors. In the United Kingdom there are Professors, Readers or Assistant Professors, Lecturers and Assistant Lecturers, in France and Germany there are similar grades. Even in the U. S. S. R. the three class system exists.

8. *The Weakness of the Service System.*—There are no strong grounds for abandoning the classification. Even the advocates of a single class admit the desirability of retaining the three designations. What they want is a continuity of the grades and automatic promotion from one grade to the other. In our opinion the service system which obtains in the Government departments where a person rises to his maximum through sheer flux of time is detrimental to the interests of the university. Promotions from lecturership to readership and from readership to professorship should depend upon considerations of experience, scholarship and research as well as distinction in teaching. Mere seniority should not be the ground for promotion. Automatic salary increases without regard to merit stifle incentive. Time served is not a measure of growth in academic competence. Promotions should be earned and each advance in rank should be based on an evaluation of the individual's achievement. A university which allows considerations other than those of intellectual eminence as objectively demonstrated through contribution to learning and extension of the boundaries of knowledge will soon lose its moral prestige and with it the authority due to true scholarship.

Again the existence of the grades is a spur to ambition ; in the university where life is dynamic and knowledge grows from day to day it is dangerous to remain slack. The higher grades should be the prize of strenuous endeavour. Otherwise there is serious danger of minds remaining static and even becoming retrogressive.

9. *Professors, Readers, Lecturers, Instructors.*—For our universities, then, we recommend the following grades for teachers :—

1. Professors
2. Readers
3. Lecturers

In addition it appears that a fourth grade analogous to the Instructor's grade in the U. S. A. or Assistant Lecturer's in the U.K. is required. The need for this grade arises because of the vast increase in the numbers of students in the colleges and the universities.

If the universities are to attempt to give some individual attention to students, especially in the junior classes, and to maintain the proper teacher-student ratios, without unduly augmenting expenses, the way seems to be to institute a new grade. The teachers of this grade may be called Instructors as in the U. S. A. or Fellows. They will participate in the teaching of junior classes, and will have charge of tutorial groups. Besides they will help students in the running of extra-curricular activities. They may hold their appointment for a term of 3 to 5 years.

10. *Research Fellows.*—In many universities scholarships are given to post-graduate students who have done well in their examinations and who desire to proceed to research. These scholarships are usually for a period of one or two years. Now some of these scholars show research abilities of more than average character, but at the expiry of their term of scholarship they seek jobs and become absorbed in different avocations ; thus their special talents do not find the opportunity of full development.

It is our opinion that some means should be found for retaining such scholars engaged in their researches without their being encumbered with teaching or other kinds of routine duties. They may be designated as Research Fellows.

11. *Salaries.*—The classification of teachers involves the questions of emoluments and conditions of service. In India there is a great variety of salary scales. Not only do the scales differ from university to university, scales of Government managed institutions differ from those of Government aided and privately managed institutions, and then again from those of missionary or unaided institutions. Scales of professional and technical teachers differ from those of teachers of other subjects and departments. The scales in the colleges are not the same as in the universities. Thus for the same type of work we may have many types of payments. We give in the Appendix B the scales of pay in the different universities.

12. *Present Scales.*—On the whole the scales are lower in the universities of the South—Andhra, Annamalai, Madras, Mysore, Travancore, and higher in the universities of the Deccan and the North. While it may not be possible to introduce identical pay scales in all the degree colleges and universities of India, the disparities ought not to be so great and conditions of service ought to be more uniform. For example, the ordinary scale of a Professor in the Annamalai University is Rs. 250—15—400—20—500, that of a Reader Rs. 200—10—300 and of Lecturers Grade I Rs. 150—10—250 and Lecturers Grade II Rs. 100—10—150.

In Madras the following are the scales for university teachers :—

Professor	Rs. 750—50—1,000
Reader	Rs. 400—25—600
Lecturer	Rs. 210—15—300

The grades in the northern universities tend to fall into the following pattern :—

Professor	Rs. 800—50—1,250
Reader	Rs. 500—30—800
Lecturer	Rs. 250—25—500

13. *Qualifications for the Different Grades.*—Now before we proceed to discuss our proposals regarding salaries, it is necessary to indicate the considerations underlying such proposals. The gradation of university staffs is based on considerations of experience, scholarship, research and teaching ability. The highest grade, namely that of a Professor, should obviously require the presence of all these at a high level. Normally the Professor ought to be a person who has taught the highest classes for a considerable number of years, has established his reputation for scholarship, is not merely a narrow specialist but has wide interests and a broad outlook, so that he can inspire and stimulate his colleagues in the department and effectively contribute to the solution of academic problems of the university. It is equally important that he should have a keen interest in the advancement of knowledge. He should not only be in touch with the latest developments in his branch of studies, but he should himself be an active member of the caravan which is carrying forward the precious burden of knowledge.

Ordinarily he will be about the age of 45. In the prime of life, mature in judgement and possessed of well-tested and well-considered ideas, he should fill the role of leader to both teachers and students, and of head of the department of his branch of learning.

The post of Reader, or as it is known in the U. S. A. of Associate Professor, is intended for one who is well qualified to act as the associate of the Professor, a man of learning and research who is making his mark in the world of scholarship. He has not the length of experience of the Professor as he starts in his appointment when he is about 35 years of age. But he is not burdened with administrative duties as the Professor is, and his main concern is with teaching and investigation. Either he possesses a research degree or has published papers embodying the results of his researches in recognised and well-established journals. He keeps abreast of the progress of his own line of study, and is capable of guiding research students

In the Lecturer we expect a first class academic record and it is desirable that he should possess some teaching experience. He ought to have a genuine disposition towards research and keenness for scholarship. A Lecturer should ordinarily have started as a Research Scholar or Fellow who may have completed a thesis. He should be able to speak clearly and with some degree of fluency. He should be able to command the respect of his pupils and should have sympathy, tact and a sense of vocation. A Lecturer will start about 10 years younger than a Reader.

The post of Instructor or Fellow should be a tenure appointment for a term of 3 to 5 years. It should be open only to Masters of Arts, Science, Commerce etc. whose academic career has been bright, and who have a real bent for scholarship. The Fellow will deal with undergraduates and much of his work will be to direct their studies, to impart supplementary instruction and to conduct tutorial classes, under the guidance of senior members of the staff. He will not be overburdened with work, so that he will have enough leisure to pursue his studies and lay the foundations of a career of scholarship and research.

14. *Comparison of Teachers' Salaries with those of other Services.*— The other factors which must be taken into account in determining salary scales are comparison of scales with those in other public services and with the nature of work and of responsibility in them. Now it is not easy to institute these comparisons for the points involved are not altogether susceptible of objective or exact quantitative statement. Yet a rough comparative analysis of the nature of duties and responsibilities involved may help in the kind of money value assessment required.

The occupation of the teacher is undoubtedly more satisfying than any other pursuit. As a spiritual being man's nature yearns for truth and enlightenment, and for a fellowship through which he shares these with others. By profession the teacher is dedicated to the search for truth. He is a pilgrim on the path which leads to the goal of intellectual satisfaction and he is a traveller in a goodly company which stimulates and encourages him. He dwells in a world where he has the feeling that he belongs to it and where he has no sense of alienness. He has the opportunity which few others have of leading a life in which work is happiness.

The work is congenial and he enjoys amenities which few other professions afford. During terms his lecturing hours are not long and in the intervals of vacations he is master of his time and movements. That their daily leisure and their holidays are not

periods of idleness and inactivity but of strenuous preparation and keen study does not alter the fact that these pursuits are pleasure giving and followed in surroundings where there should be few strains and little conflict.

The teacher's duty is one of great responsibility, because on the manner of its discharge depends the teacher's effectiveness as an influence in the moral and intellectual growth of youth. Again, he is a centre from which eddies of thought spread, on his inventions and discoveries depends much of the progress and welfare of the nation and through him national culture is preserved, fostered and developed. But while some of this work may be capable of yielding immediate and tangible results, the value of much of it cannot be assessed, because the relation of cause and effect cannot be established. While the profession has always been highly respected, it is only in recent times that it has risen in the real esteem of society largely because of the scientific contributions of university teachers.

It is not necessary to point out that in contrast the duties of public officers in the administrative, executive, judicial and other services involve responsibilities which have immediate effect upon the life, property and well-being of individuals and groups. They have to take decisions whose consequences for good or evil are measurable and may be tremendous. They live in an atmosphere of tensions, and their work and leisure have little in common. They have none of the period of vacations free from anxieties of office.

15. *Salaries of Teachers in the United Kingdom and the U.S.A.*— These differences are reflected in the emoluments of the different types of services. If we compare for instance the scales of salaries in the U.S.A., we find that while the scale of Professor's salaries varies from a minimum of 4,300 dollars to 9,000 dollars, the maximum from 5,500 dollars to 15,000 dollars and the average is 5,871 dollars for men and 4,473 dollars for women, the salaries of the Judges of States range between 7,500 dollars in Tennessee to 28,000 dollars in New York, the salaries of administrative officials for Revenue and Taxation range between 5,700 dollars to 16,500 dollars.

In England while Professors at Oxford and Cambridge get £1,600 a year, Inspectors of Schools receive from £900 to £1,200, staff and District Inspectors from £1,420 to £1,620, Chief Inspectors £1,800 and Senior Chief Inspectors £2,200 ; salaries of Judges of the Highest Tribunal are £5,000, and of Senior Medical officers from £1,500 to £3,000. The salary structure of the Administrative class is set out below :—

	£.
Head of major department (corresponding to a Secretary of Government) ..	3,500
Deputy Head (corresponding to Joint Secretary)	2,500
Under Secretary (corresponding to Deputy Secretary) ..	2,000
Assistant Secretary (corresponding to Under or Assistant Secretary) ..	1,200 to 1,700

In Indian money the average salary of a Professor in the U. S. A. is Rs. 1,750 a month, the maximum salary (fixed only in Columbia) Rs. 4,000 a month, and that of Professors in the premier universities of the United Kingdom about Rs. 1,750 a month.

16. *Salaries in other Services.*—The prevailing rates of Professors' salaries in India have been stated above. The salary scales of some of the All-India services are given below :—

Class I Services—

Junior Scale	Rs. 350—590—EB—850
I.A.S. Scale	Rs. 350—690—EB—950
Senior Scale	Rs. 800—40—1,250—50—1,300—60—1,600
Junior Administrative posts	Rs. 1,300—60—1,600
Senior Administrative posts ..	Rs. 1,800—100—2,000
Secretaries (Joint & full) ..	Rs. 2,250—3,000

These comparisons only illustrate the principles discussed above and need not be pressed further because American or English and Indian conditions are not analogous. America and England are highly democratic countries, India is just beginning its career on the road to democracy. An important consideration about India is that Federal or Central services differ a great deal in scales of salaries from Provincial services. Except for the three Central Universities of Aligarh, Banaras and Delhi all other universities are Provincial.

The Provincial scales in the United Provinces for instance are :—

P. C. S. (Executive and Judicial)—

Ordinary Grades—Rs. 250—400—EB—700—E. B.—850.

Selection Grades—Rs. 1,000—50—1,200.

This is the highest paid service in the Provincial cadre and in most other Provinces the scales are the same.

17. *Proposed Scales.*—In fixing the salaries of teachers we have to keep in mind the consideration that the best talent available in the country should not altogether be absorbed in the services, learned professions or business, and that a proportion necessary for their requirements should be available for the universities. At present the best students of the universities opt for Central services and prepare for Central competitive examinations, their second choice is for Provincial services. This is not as it should be. The attraction for university service should begin to operate as soon as a student starts thinking of his career, because the attitudes and abilities which he develops are governed by this choice. If therefore a youngman at an early stage in his university career makes up his mind to be a teacher, he will have a different approach towards his studies than that of a student whose main concern is doing well at competitive examinations.

For reasons which have been discussed above it is not possible to fix university salaries on the scales of Central Administrative Services. But there is no reason why they should not compare favourably with those of Provincial services, for if we want really to make our universities laboratories of national thought and nurseries of national leadership in the fields of science, culture and public affairs, then we must induce our best men and women to devote themselves to university service. Their very nature and function demand that universities should not be treated in a narrow parochial or provincial manner, they ought to be regarded as assets of the nation as a whole. They should be gathering centres for teachers and students from all over India and the culture and spirit of India should brood over them. Thus alone will they preserve and foster the unity of the nation. They should be treated in principle as All-India Services.

Taking all things into consideration we recommend the following scales of salaries for the different grades of university teachers—

Professors	Rs. 900—50—1,350
Readers	Rs. 600—30—900
Lecturers	Rs. 300—25—600
Instructors or Fellows ..	Rs. 250
Research Fellows	Rs. 250—25—500

We also recommend that special professors may be appointed for a definite term not exceeding five years on Rs. 1,500 p.m. In case of appointments of Professors in technical subjects a personal allowance not exceeding 500 p.m. may be given. When a teacher does exceptionally good work his work may be recognised with a special increment within the grade. For people on the maximum of the grade a special personal allowance may be given in recognition of valuable work. It should be noted that when the existing grades are changed to the proposed ones the present incumbents are not to be automatically promoted but subjected to the scrutiny of Selection Committees.

We give below for comparison the average salaries[1] of these grades in the U. S. A. and the U. K.

	U.S.A.	U. K.
Professors	$5,900 p.a.	£1,660 p.a.[2]
Readers	$4,800 p.a.	£1,000 p.a.
Lecturers	$4,000 p.a.	£765 p.a.
Asstt. Lecturers	$3,030 p.a.	£475 p.a.

[1] The figures are only approximate and have been rounded off. In the case of U. S. A. they have been taken from Circular No. 254, dated March 15, 1949 issued by the Federal Security Agency Office of Education, Washington ; and in the case of U. K. from University Development from 1935-47, published by His Majesty's Stationery Office, 1948.

[2] At Oxford and Cambridge, a Fellowship is attached to Professorial Chairs.

The scales of salaries for teachers in affiliated colleges have varied from one part of the country to another and it is desirable that there be some uniformity dependent on the type of work done by the teachers. For colleges which have no post-graduate classes, we recommend the following scales—

Lecturers ..	.. Rs. 200—15—320—20—400.
Senior Posts ..	.. Rs. 400—25—600—(two in each college).
Principals ..	.. Rs. 600—40—800.

For colleges which have post-graduate classes, the grades should be—

Lecturers ..	.. Rs. 200—15—320—20—400—25—500.
Senior Posts ..	.. Rs. 500—25—800 (two in each college).
Principals ..	.. Rs. 800—40—1,000.

While these are the ordinary grades, the senior teachers and Principals may sometimes be recruited on special salaries but these should not exceed Rs. 1,250.

III.—Conditions of Service.

18. *Provident Fund and Residential Accommodation.*—In addition we propose the provision of a Provident Fund for every teacher, to which the teacher will contribute 8 per cent of his salary and the university 8 per cent. In the residential universities especially and in other universities generally it is desirable that teachers should live on the campus of the university or as near to it as possible. Universities will be well advised to provide residential accommodation on rent to the teachers in the neighbourhood of its buildings and hostels. It is essential that a room be set apart for each teacher in university buildings.

19. *Proper Recruitment.*—In a later chapter we shall discuss the methods of selection of teachers. We need not repeat here our recommendations. We must, however, reiterate our warning against the growth of certain tendencies which are unhealthy. One is inbreeding. Universities are more and more inclined to recruit their staffs from among their own students and teachers. Secondly, there is negligence in applying criteria of merit in the selection of the lecturers. The first breeds narrow parochialism, gives a stimulus to provincialism and leads to stagnation. The second is dangerous because it encourages favouritism, depreciates the value of the work of the lecturers and gradually vitiates the whole atmosphere of the university, for the Lecturer of to-day is the Reader and Professor of to-morrow. For university appointments there should be no criterion other than that of merit, remembering that merit includes academic distinction, teaching ability, leadership in student activities.

We have proposed the establishment of four classes of teachers, and we have stated our opinion that transfer from one grade to another ought not to be automatic or on the basis of mere seniority of service. We hold that each grade should be regarded as a selection grade, and recruitment for vacancies in the grade should be by open invitation of applications by advertisement all over India and through properly constituted Selection Committees.

20. *Proportion of Higher Posts.*—This raises the problem of openings in the higher grades, for if the number of posts of Readers and Professors is too small the chances of Lecturers for promotion will be very limited and one of the most powerful stimuli for improvement will be lacking. Security of tenure and reasonable prospects of advancement are essential to maintain the health and tone of a service. Few universities have adopted any definite rules concerning this matter. In our opinion it is desirable that a ratio between the senior and junior portions of the staff should be laid down, and we suggest that ratio to be :

Professors and Readers : Lecturers and Instructors
: : 33 : 66

Our scheme envisages the entrance of an aspirant to university service at the age of 22 or 23 as an Instructor or Fellow. He holds a temporary appointment for 3 to 5 years, during which period he serves his apprenticeship for training as a teacher, and obtains an opportunity for scholarship and achieves a research degree. At the age of 25 to 26 he is fitted to hold charge of a Lecturer's post. By the time he reaches the maximum of the Lecturer's grade he should have acquired sufficient experience and standing to be eligible for a Readership. And if he has made good use of his opportunities he should look forward to climb to the highest rung of the ladder about the age of 48. It is true that at each stage he has to accept the challenge of an open competition, but that is as it should be, both in his interest and that of the university.

21. *Age of Retirement.*—The age of retirement in the case of public servants is determined on such considerations as the expectation of life of this class of people, the nature of their work and the retention of physical and mental capacity needed for its proper performance. Now university teachers as a class belong to the longest lived group in any community and the reasons are that they have a more disciplined life, and live in more congenial surroundings. They are not exposed to the same physical and nervous strains as many others are, and on the whole they enjoy more equable conditions of existence. Even though their physical vigour may decline the

intellectual capacity may remain unimpaired. Thus in the case of teachers age may not be a disability, for experience enriches the mind and maturity of knowledge ripens into wisdom.

In some western countries the university teacher is not allowed to retire till he attains the age of 65 or 70, but hygienic and climatic conditions are more favourable there than they are in India. We therefore recommend that the ordinary superannuation age for all teachers should be sixty, but a Professor—provided he is in good health, should be allowed to serve till 64; no extension, however, should be for more than 2 years at a time.

22. *Conditions of Service and Leave.*—It is not necessary to discuss at length the conditions of service and the leave rules. We may say in general that a written contract is necessary. For disputes between the university authorities and a teacher reference to a tribunal composed of representatives of the teacher, the university and an umpire is also essential. All universities have rules concerning casual leave, leave without pay and leave on quarter, half or full pay. In addition it is desirable that there should be provision for study leave. One year's leave at a time and three years' leave in total service should be available to any teacher who wishes to seek intervals of freedom from routine duties devoted to study. These periods may be spent abroad or in India according to the nature of the study undertaken with the advice of the Professor. A teacher should receive half pay during the period of study leave.

23. *Hours of Work.*—The hours which a teacher should be asked to devote to actual teaching should be defined, so that the load of teaching is evenly spread and teachers are not condemned to the task of serving up a multiplicity of lectures consisting of nothing more than a rehash of text books available to the student. No task is more soul-killing than the repetition of the same set of lectures from year to year. But if the teacher is compelled to give too many lectures this is inevitable. Eighteen periods a week including tutorial classes is the maximum that any teacher should be required to do. Those who are in charge of Master's degree classes and have to guide research students should have between 12 to 15 periods.

It must be remembered that lecturing is not the only duty of the teacher. It is an important duty but to carry on research is equally important, and to give advice and counsel and to participate in students' activities are no less important. A teacher must find time for study, for unless he keeps his mind alert and in tune with the advances in his branch of knowledge he can neither stimulate the minds of his pupils nor retain the freshness which is essential to his teaching.

IV.—Recommendations.

24. We recommend—

(1) that the importance of the teacher and his responsibility be recognised ;

(2) that conditions in universities which are suffering from lack of finances and consequent demoralization be greatly improved ;

(3) that there be four classes of teachers, Professors, Readers, Lecturers and Instructors ;

(4) that each university should have some Research Fellows ;

(5) that promotions from one category to another be solely on grounds of merit ;

(6) that the scales of salaries for university teachers be :—

Professors	Rs. 900—50—1,350.
Readers	Rs. 600—30—900.
Lecturers	Rs. 300—25—600.
Instructors or Fellows	Rs. 250.
Research Fellows	Rs. 250—25—500.

(7) that the scales of salaries for affiliated colleges with no post-graduate classes be—

Lecturers	Rs. 200—15—320—20—400.
Senior posts	Rs. 400—25—600 (two in each college).
Principals	Rs. 600—40—800.

that for colleges which have post-graduate classes, the grades be—

Lecturers	Rs. 200—15—320—20—400—25—500
Senior posts	Rs. 500—25—800 (two in each college)
Principals	Rs. 800—40—1,000.

(8) that care be taken for the selection of proper teachers ;

(9) that the proportion of junior posts (Lecturers and Instructors) to senior ones (Professors and Readers) be roughly 2 : 1 ;

(10) that the age of retirement be ordinarily 60 but extensions be allowed up to 64 in the case of a Professor;

(11) that conditions regarding Provident Fund, leave and hours of work be definitely laid down.

CHAPTER IV

STANDARDS OF TEACHING.

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I.—The Need for High Standards.

1. *Introduction.*—It is the primary duty of a university to maintain the highest standards of its teaching and examinations. A university is a place of higher education where the personality and capacities of the students are developed to the utmost by teachers who should themselves be at work at the frontiers of knowledge in their respective fields. The success of a university is to be judged as much by the type of graduate it turns out as by the amount and quality of research contributed by its teachers and research students. It must be clearly recognised that there is no conflict involved between the twofold function of a university to educate its members and to advance the frontiers of knowledge—the two functions are, in fact, complementary. Unless high standards of teaching and examinations are maintained, research will suffer, since research can continue uninterruptedly only if there is a regular supply of graduates well prepared by general education for specialized research work. On the other hand, if research is neglected by teachers, their teaching will lack vitality and will rapidly become stale. A degree must always be what a university makes it by the kind of teaching it imparts and the type of intellectual and social life it provides for its members. If our universities are to be the makers of future leaders of thought and action in the country, as they should be, our degrees must connote a high standard of scholarly achievement in our graduates.

2. *Low Standard of Degrees.*—Many of our witnesses have expressed the opinion that the average standards of our university teaching and examinations are low and one principal of a degree college maintained that an average graduate of an Indian university was not very much superior to a matriculate of a British university. This may be an exaggeration, but it is true that many of our universities do not compare favourably with the best of British and American universities in respect of their teaching and examination standards. Unless we ensure the highest standards of teaching in our universities,

our degrees will not command recognition and respect either in our own country or abroad, and a large number of students will have to go abroad for their higher education. Our universities should maintain the academic character of their work on a level recognised as adequate by the universities of other countries. Universities are our national institutions, and to keep up our national prestige, our degrees must be such as to command international recognition. As long ago as 1921 the Lytton Committee emphasized the need for improving the standards of teaching in Indian universities and for making the highest types of training in all subjects available within the country. Although conditions in several universities have shown a marked improvement over those that obtained in 1921 and reasonable facilities in post-graduate and research work in several subjects are now available at several universities and institutes, the average standard of our degrees still remains on the low side.

3. *Low Academic Standard of University Entrants.*—University teachers almost unanimously complain of the low academic standard of the average university entrant, and several of them have declared that a large majority of students come to the university so ill-prepared as to make it difficult for them to take advantage of university education, and that intermediate work is really school work, which should have been completed at the high school stage. That the complaint is largely justified is shown by the large percentage of failures at the intermediate examination of the different universities and boards as seen in the following table :—

Serial No.	*University or Board	Average percentage of "failures" during the last 5 years (1944-48) at the intermediate examination
		%
1	Banaras	37·6
2	Bombay	44·0
3	Gauhati	60·0 (1948 only)
4	Madras	59·4
5	Patna	43·5
†6	U. P. Intermediate Board	37·5
7	Utkal	48·0

*These 7 Universities and Boards have been picked out at random.

†The U. P. Intermediate Board has the highest percentage of passes in this list, but it may be noted that during the last 5 years (1944-48) the Board allowed 35% to 41% of its candidates to appear privately for the Intermediate examination and passed 7% to 20% of the candidates with the help of grace marks. While in 1927 private candidates formed only 16% of the total number, in 1947 they had grown to 41%.

That the annual wastage due to failures should range from 37·5 per cent to 60 per cent is staggering, if we bear in mind the fact that the intermediate examination is preceded by a similar process of screening two years earlier at the high school stage. But even with this high percentage of failures, the average standard of teaching and examinations is not high enough, since we know that the minimum marks required for a pass are only 33 per cent and that a large majority of candidates pass in the third division. There is little doubt that this enormous wastage is due, firstly, to the large number of unsuitable entrants coming to the intermediate classes, secondly, to the poor average quality of teaching provided in the intermediate classes, and thirdly, to the laziness of, or insufficient work put in by, the students themselves.

4. *Annual Wastage at the Intermediate Examination.*—That the annual wastage at the intermediate examination is so inordinately large and must be avoided has not been adequately realized either by the teachers or by parents or even by the Government which directly or indirectly finances intermediate and university education to a large extent. A deplorable wastage of public funds goes on year after year but what is worse, there is an unconcerned complacency about this serious loss of public funds on the one hand, and waste of time, energy and funds of students and their parents, besides terrible frustration of their hopes and aspirations on the other. Secondary schools and intermediate colleges form the foundation of university work. Any reorganization of our universities without a corresponding improvement in school and intermediate college teaching will not produce the hoped-for results. Our high school and intermediate standards are undoubtedly low, and in order to improve them we should not only exact a higher standard in these examinations but also considerably improve our teaching. We cannot raise examination standards unless we improve the quality of teaching first.

5. *Causes of Low Standards in Schools and Intermediate Colleges.*—Our schools and intermediate colleges are congested and understaffed, and teachers are so ill-paid that generally only those graduates who fail to enter any other profession take to teaching as a last resort. Very few school teachers have a call for or take pride in their profession. Secondary education can only improve if a large number of first-rate graduates become school masters. While university standards cannot improve unless the quality of teaching in schools and intermediate colleges improves, it is for the universities to provide a continuous supply of highly trained and efficient teachers for these institutions. Reform should, therefore, begin at both ends.

It is pertinent to recall that secondary schools in the neighbouring country of Ceylon maintain a much higher standard than we do in our country.

If we attain high standards in our high schools and intermediate colleges, there should be less need for a large number of students to enter the universities at all. As a community we look down upon the school teacher and pay him as little as we can. A foreigner would be struck by the fact that we recruit so few of our college and university teachers from the ranks of school masters ; in England and America many school teachers rise to be university teachers ; in India the average standard of scholarship among school teachers is so low that they seldom qualify to become university teachers. If we are to raise the average standard of attainment of our school teachers, there is no reason why there should not be a larger percentage of teachers from our schools selected for teaching in our colleges and universities. The real need is to be able to offer salaries and prospects which will attract persons of first class ability for our schools.

6. *Weakness in our Educational Machinery.*—One of the greatest needs of present day India is more education, widely spread throughout the community. Fortunately, both the Government and the people are keenly alive to this pressing need, but they are not equally alive to the concomitant need of a strong emphasis on *excellence in the quality of education* so that there is no avoidable waste of public funds as it occurs now. Our provincial governments are naturally keen on " basic education " and are financing schemes for its wide extension, but unfortunately they do not seem to be equally keen on secondary education which is the *real weak spot* in our entire educational machinery. They have not fully realized that the army of competent teachers needed for the rapid expansion of basic education must be provided by our secondary schools and intermediate colleges. Further, any university reform will remain largely ineffective unless the level of secondary education is raised so as to furnish the necessary foundation for a sound university system.

II.—*The School and the University.*

7. *Different Functions of a School and a University.*—In order to improve the organization of teaching and tests in our high schools and intermediate colleges on the one hand, and in our universities on the other, it is necessary at the outset that we should be clear as to the different functions of a school and a university. The function of a school is not merely to prepare students for the university but also to provide a suitable education for the large number of pupils who have no intention of proceeding to a university. From the

figures available to us, we find that of the students that pass the high school examination, 50—55 per cent actually go up for the intermediate, while the remaining 45—50 per cent do not. The education of these two sets of students must be combined together in most multi-purpose schools to mutual advantage, while there will be other uni-purpose schools where students will be trained for work in agriculture, industry and commerce.

8. *Functions of a School.*—It is commonly stated that the function of a school is to provide ' a good general education to its pupils ', but it is necessary to know what exactly are the elements of this good general education which will not only prepare a pupil for university work, but at the same time prepare him for practical work to earn his living if he does not proceed to a university. A school should, of course, provide for adequate classroom intellectual discipline, but should at the same time place equal emphasis on the physical training and corporate activities of its pupils. It should, in fact, provide for the physical well-being of the pupils first, as no pupil can make satisfactory progress in school or later in the university or in a profession unless he is physically fit. Then, a pupil must take part in the corporate activities of the school and thus learn to subordinate himself under rule to the common will, and if he has the talent, to exercise leadership in the small community of his class. Along with these activities the school must develop and test the intellectual discipline and aptitude of its pupils. A school fails of its purpose if it neglects any of these three sides of its pupils. Unfortunately it is only the third aspect that is attended to at present in most of our schools and that is why many boys leave the school physically ill-developed, socially ill-adjusted and unwilling to work in a team, even though they may secure good marks in their examinations. The school must integrate the individual child into community life, impart to him useful information and develop in him necessary habits of intellectual effort.

9. *Functions of a University.*—The university, on the other hand, should be a great meeting ground for young men and women, where they receive higher instruction from their teachers as well as prepare for life through contact with their contemporaries and their seniors. In the university an under-graduate must expect to be treated as a grown-up person; the formal discipline of the school must be loosened to give place to comparative freedom for the under-graduate to order his own life. In order that a student should profit from university education and its manifold opportunities, the university should ensure that all entrants are sufficiently mature for the kind

of instruction it provides, and that they have had a broad general education and have reached (at least in 4 subjects) a standard of attainment adequate as a basis for the further study of these or other subjects at the university level.

10. *Standard of Admission to the University Courses and the Age of Entry.*—Students arrive at the stage of maturity for university work at about the age of 18, though there are exceptional individuals who reach it earlier than 18. Before this age of maturity is reached, a boy or girl must stay under the formal discipline of a school and should be taught by the methods of the school and not by the methods of the university. That is why the British, the European and the American students are seldom admitted to a university before they are 18 or 19. In U. K. and U. S. A., and most European countries like Germany, France and Switzerland, at least 12 years of schooling are necessary before a student enters the university. In India most of the work now done in our present intermediate classes is really school work and should properly be regarded as pre-university work. as in U. K. and U. S. A. The real university work is done only for two years of the B. A. and the B. Sc. classes and that is why the standard of achievement of our average graduate is low. We, therefore, recommend that the standard of admission to the universities should be the present intermediate examination, to be taken by a student after completing full 12 years of study at a school and at an intermediate college, normally at the age of eighteen. This change will mean that students proceeding to a university for degree courses will have the essentials of a good general education and will be more adequately prepared for university work; they will be mature enough to look after themselves, will not be bewildered by the comparative freedom of university life and will, with intelligent self-interest, take better advantage of educational opportunities in the universities. Since most universities in India are situated in large towns, it is desirable to keep away young and immature students from crowding into these towns where conditions of life provide innumerable temptations and few restraining influences.

We must also look at the age of entry into the university from the point of view of 'the public' or rather the parent, as also from that of the boy or the girl. It is so difficult for many parents to decide what their sons and daughters between the ages of 14 and 18 will do and yet these are the most critical years of their lives. In most cases their circumstances are fluid; parents do not know whether the aptitudes of boys or girls will fit them for a university training; the boys or girls do not clearly know what possibilities are open to them and the result is that, for want of any proper guidance, all those

who can afford and even many of those that can ill afford, whether they have the aptitude or not, flock to the university or a college far away from their homes. The universities and colleges, many of them anxious to augment their fee-income, admit as many students as they can to their intermediate and degree classes, irrespective of whether they are likely to pass or not at the end of the two years. There is little doubt that these colleges and universities commit an act of cruelty towards those of their students who have no aptitude for university training.

11. *Attitude of University Students.*—The average student in our universities brings with him the school attitude towards his studies. He expects to be treated like a schoolboy even in the university. He does not realize that it is his duty to study and not the teachers' duty to make him study. He does not make full use of the opportunities the university offers him and, therefore, does not get proper advantage from the university. Unless he himself works and does a good deal of written work for his teachers to correct, he cannot get benefit out of his teachers. This attitude on the part of the students leads to another noticeable defect, *i.e.*, the very slow rate of progress of work in the classes. In British and American universities the rate of progress of work in a class is ever so much faster than in an Indian university with the inevitable result that they are able to cover a much larger ground in the same period of time and the contents of their syllabuses are fuller and richer.

12. *Recommendation of the Calcutta University Commission.*—Thirty years ago, the Calcutta University Commission recommended the institution of ' intermediate colleges ' and also held that the intermediate examination should be the qualifying test for entry into a university. These recommendations were adopted only by the Government of the United Provinces and the teaching universities of U. P., Lucknow and Allahabad, and the affiliating university of Agra, admit students only after they have passed the intermediate examination. This step has been very beneficial to these universities ; freed from the burden of intermediate classes, they have been able to develop good post-graduate departments like those of the University of Calcutta, and have thus been doing more of real university work than many of the other universities. We certainly do not aim at uniformity in all the universities, as we do not consider that education all over the country should conform only to one pattern, but in the matter of admission to the university there should be a general recognition that intermediate examination should be the admission test for all the universities in the country.

III.—Secondary Education.

13. *Reform of Secondary Education.*—While we are definitely of opinion that no student should be admitted to a university until he has passed the intermediate examination, we are equally convinced that the mere raising of the standard of admission to the level of the present intermediate examination would not by itself improve the work of the universities. We must at the same time make better provision for the training of students at the high school and intermediate college level. In the present conditions of inefficient and uninspiring schools the four years of the life of a student, between the ages of 14 and 18, when his memory is most active and when his ability to do sustained intellectual work with the minimum of boredom is at its highest, are largely wasted. The abler students do not get a fair deal and are kept back by the less intelligent—the best are being smothered by the many. In fact, our secondary education needs radical reform.

14. *Intermediate Colleges.*—The Calcutta University Commission (1919) recommended the institution of *Intermediate Colleges* as "the very pivot of their whole scheme of reform". The essence of the proposal in its best form was that the two top classes of the present high school course were to be removed from the high schools and combined with the two years of the intermediate course in an entirely new type of institution called the *Intermediate College*. The intermediate College is to correspond to the *Realschule* or Gymnasium of Germany in which sound and liberal training is imparted to the students and in which opportunities of higher secondary education are adapted to the needs of industry, commerce and agriculture as well as medicine and engineering in all its branches. The aim of these colleges would be to meet a variety of needs of our young men by giving a vocational bias to their courses while retaining at the same time their value in a system of sound general education as a preparation for university courses. The essential qualities of a good education to be given at an intermediate college are admirably described in the following paragraph[1] :—

" Education should be given under conditions favourable to the health of the pupils. Their bodies should be developed and trained by systematic and vigorous exercise. Their eyes should be trained to see, their ears to hear, with quick and sure discrimination. Their sense of beauty should be awakened, and they should be taught to express it by music and by movement, and through line and colour. Their hands should be trained to skilful use. Their will should be kindled by an ideal and hardened by a discipline

[1] Calcutta University Commission Report : Vol. IV, page 91.

enjoining self-control. They should learn to express themselves accurately and simply in their mother tongue and, in India, in English also. Through Mathematics, they should learn the relations of forms and of numbers. Through history and literature they should learn something of the records of the past; what the human race (and not least their fellow-countrymen) have achieved; and how the great poets and sages have interpreted the experience of life. Their education should further demand from them some study of nature and should set them in the way of relating both the amount and the quality of evidence which a valid induction requires. Besides this it should open windows in their mind, so that they may see wide perspectives of history and of human thought. But it should also, by the enforcement of accuracy and steady work, teach them by what toil and patience men have to make their way along the road to truth. Above all, the education should endeavour to give them, by such methods and influences as it is free to use, a sure hold upon the principles of right and wrong and should teach them to apply those principles in their conduct. Thus its chief work is to enlighten and practise the conscience, both the moral conscience and the intellectual. And, through the activities of corporate life in the school, it should give the pupils experience in bearing responsibility, in organization, and in working with others for public ends, whether in leadership or in submission to the common will."

Teaching in our schools and colleges falls considerably short of these ideals. The Government of the United Provinces made an attempt to start intermediate colleges from 1923 onwards but on account of financial stringency their effort could not be kept up consistently during subsequent years with the result that the intermediate standards have deteriorated during recent years. In many cases intermediate classes were simply tacked on to the existing high schools, and school teachers without proper qualifications were asked to teach the intermediate classes as well. No consistent attempt was made to recruit highly trained, efficient and well paid staff for the intermediate classes. Accommodation and equipment were generally inadequate. Some degree colleges were asked to drop their degree classes and actually functioned as intermediate colleges for some years, but many of them again took up degree classes without recruiting a different staff. In most cases, the intermediate classes still remain attached to first degree and post-graduate classes in the same institution. A real, strong, well-staffed 4-year intermediate college, as envisaged by the Calcutta University Commission, hardly exists anywhere in India, although they recommended that there should be one such institution in each district. It is unfortunate that the vital importance of inter-

mediate colleges in our educational system has not been adequately realized either by the public or by the Governments of the Provinces and the States. These institutions should serve as important a function as the universities ; they should have sound well-established traditions of good all-round general education ; teachers should feel that service in these institutions is as honourable and dignified as in a university ; principals and teachers of intermediate colleges should be well paid. At present every high school tries to become an intermediate college whether it has the resources or not, and the obliging authorities relax the necessary conditions and recognize it as an intermediate college ; the interests of the students and in fact of the whole community suffer since such a college fails to develop and train the powers of the younger generation. Hardly has it had time to consolidate itself as an intermediate college, when another equally obliging university recognizes it as a degree college. The result is that the college is neither a good intermediate college nor a proper degree college. Thus while the intermediate examination is the admission examination for the universities of Lucknow, Allahabad and Agra, the university work has not improved as much as it should have, because of the inadequacy of teaching at the intermediate colleges. We have already lost 30 years by neglecting to raise the standards of our high schools and intermediate colleges as recommended by the Calcutta University Commission and it is time we realized that our secondary education remains the weakest link in our educational machinery and needs urgent reform.

While we do not insist on a uniform pattern of institutions for the high school and the intermediate colleges and will even allow intermediate classes to continue in the degree colleges as in South India, we think that there should be only one public examination and that at the intermediate examination stage. This examination will mark the end of secondary education and the beginning of university education which will extend over a period of three years for the first degree course.

IV.—Occupational Institutes.

15. *Occupational Institutes.*—While we believe that every boy or girl of promise and capacity should have the right to go to an intermediate college and a university, if he or she so desires, we cannot look with equanimity upon the present situation in which a large number of students who are obviously unfit for higher education enter the universities and swell the percentages of failures at the intermediate (37·5%—60%)[1] and the first degree examinations (28%—62%).[2] It is likely that many of these unfor-

[1] *Cf.* Section [illegible]

[2] *Cf.* Section 22.

tunate failures have abilities of a different kind and would fare better if they worked with their hands and fingers. They would succeed much better in life, if they took to an occupation requiring craftsmanship after ten or twelve years of schooling. While it is the duty of the university to make its admissions very carefully so as to take in only those students who are likely to profit by university education, it is equally the duty of the State to provide opportunities in suitable occupational institutions for those who can be trained according to their different capacities to earn an honest and decent living.

There are several occupational institutions of different kinds and degrees of excellence in the country, but the Sri Jayachamarajendra Occupational Institute at Bangalore is one of the best we have seen. This institute, founded by Sir M. Visvesvaraya in 1943, is now run by the Government of Mysore and offers occupational courses for technicians in 26 branches—diploma courses in 19 branches, generally of 2 to 3 years' duration, and certificate courses in 7 branches of 1 to 2 years' duration. It offers training in such branches as automobile engineering, electrical and radio-technology, ceramics, glass technology, mining, printing, tailoring, book-binding, etc. with 63 instructors and 24 expert workmen on its staff. There are 800 students undergoing training, and 150 students well-trained in their trades are sent out each year.

16. *Urgent Need of Technicians.*—There is urgent need for such occupational institutes all over the country. These institutes will train a large and growing body of ambitious youth for employment as technicians in various existing industries or for starting small industrial units of their own ; they will ensure a continuous flow of skilled workers for several modern industries which are being started and will also provide further training to existing craftsmen to improve their skill and production and thereby increase their income. With the growth of scientific and technical institutions and new industries in the country, we shall urgently need intelligent and skilled technicians to look after and repair scientific apparatus of all kinds[1], hospital appliances[2], glass blowing, electrical and photographic equipment, etc. In the U. S. A. it has been found by experience that for every high grade engineer ten technicians are needed. In our country we suffer from a serious deficiency of

[1] At several universities and colleges we found apparatus like microscopes, electrical measuring instruments, demonstration apparatus, etc., lying idle for want of repairs by skilled technicians.

[2] As one hospital we were told that two sterilizers costing Rs. 10,000 each were lying unused for want of technical repairs.

technicians, because every one wishes to become an engineering graduate whether he has the capacity or not. We are strongly of opinion that each province should have a large number of occupational institutes, preferably one in each district, giving training in as many occupations as possible.

V.—Refresher Courses.

17. *Refresher Courses for High School and Intermediate College Teachers.*—An urgent reform is the institution of *vacation refresher courses* for high school and intermediate college teachers. At present neither students nor teachers utilize their vacation—for most of them vacation is a period of want of occupation. Most of our school teachers do not keep intellectually alive, and there is little inducement for them to do so. There is nothing in India corresponding to the Science Masters' Association of Great Britain, or the National Education Association of U. S. A. In India teachers' associations, wherever they exist, are mainly concerned with questions of salaries, promotions, etc. of teachers and are not essentially professional societies concerned with the intellectual and professional improvement of their members ; they seldom arrange for lectures, exhibitions visits, excursions, etc. The U. P. Government started a scheme of refresher courses for intermediate teachers some 20 years ago (1927-29) ; several courses were given at different universities by university professors, and they were highly appreciated by the teachers ; but lack of funds was put forward as a reason for their discontinuance. Similarly, the Madras Government used to have vacation courses at Ootacamund for some years, but we were told that they have also been discontinued. In Bombay we were told a refresher course was held only last year (1948) at Mahabaleshwar by the Association of Head masters with the co-operation of the Education Department.

18. *Refresher Courses to be organized by the Universities.*—We believe that vacation courses should best be organized by the universities and that they should form a chief feature of the Extension Programme of each university. Our universities have not realized that they owe a responsibility towards those of their graduates who become school teachers as also towards those high schools, and intermediate colleges from which they draw their students. What could be more appropriate than to organize refresher courses for teachers who need to and should be encouraged to extend, refurbish and bring up-to-date their knowledge ? It is extraordinary that our school teachers learn all of whatever subject they teach before reaching the age of twenty-four or twenty-five and then all their further education is left to " experience ", which in most

cases is another name for stagnation. We must realize that experience needs to be supplemented by experiment before reaching its fullness, and that a teacher, to keep alive and fresh, should become a learner from time to time. "Constant outpouring needs constant intaking ; practice must be reinforced by theory, and the old must be constantly tested by the new."

19. *Co-operation between Schools and Universities.*—Refresher courses would be mutually beneficial ; they would bring universities and university teachers into close relation with their former pupils as well as other teachers, and through them with the high schools and intermediate colleges within their orbit ; on the other hand, they would raise the standards of teaching and examinations in schools and intermediate colleges, and consequently, the university entrants will come better trained academically. The university can thus become a real intellectual and spiritual home to which its teacher alumni would love to come back for nutriment of mind and spirit. By establishing friendly relations with school and intermediate teachers, university teachers can bring about collaboration of the highest utility.

20. *Stimulus for Refresher Courses.*—In order that the scheme of refresher courses may become a real success, the authorities of schools and intermediate colleges, and the Government education departments should make *certified attendance at a university refresher course* once in every four or five years a qualification for promotion. Some such stimulus would be necessary until attendance at such refresher courses becomes a tradition. As an extension of this idea, it may even be made possible for a young university teacher to go and teach his subject for a year at an intermediate college, and in his place a bright intermediate college teacher to teach for a year at the university—such exchanges will establish a very desirable and mutually beneficial collaboration. The chief need is greater intercommunication between the teachers in schools and intermediate colleges and teachers in the universities. A conscious and well-informed co-operation between school and university teachers should replace the present attitude of aloofness.

21. *Time and place for Refresher Courses.*—In natural science subjects refresher courses will have to be held for some time at any rate during Dusehra (Puja) or Dipavali (Autumn) and Christmas (Winter) holidays at the university, as laboratory accommodation and equipment would be essential. But there is no reason why such courses in Humanities and Mathematics should not be held at a hill station during summer vacation. We have not made in the past much use of our hill-stations for educational purposes, and it is time that both the Government and the people realized

that we must make the maximum use of these fine and healthy places in our country for summer months. It will be a great advantage for our school teachers to go there for 8 weeks of summer and attend refresher courses. The authorities should of course make liberal provision for travelling and out of pocket expenses of the teachers. With the closing of several European schools at hill-stations, several good school buildings are available in suitable localities at several hill-stations in most provinces of the country. These buildings could very well form holiday homes for school teachers where they can have their refresher courses. It will be very useful if teachers are sent to other provinces for their refresher courses where they can combine the advantages of travel, education and inter-provincial contacts. Alternatively, teachers may be given leave of absence for six months after every five years of service and asked to attend advanced courses at their own or any other university and obtain a certificate of attendance and good work from the head of the department of the university.

VI.—Teaching and Examinations at the Universities.

22. *Low Standards.*—While the standards of teaching and examinations in schools and intermediate colleges are low, the academic standards of universities also need a great deal of improvement. Students coming from intermediate colleges to post-intermediate teaching universities like Lucknow and Allahabad are poorly equipped for their B. A. and B. Sc. courses. In one of these two universities, the average pass percentage in the first year B. Sc. examination during the last 5 years (1944-48) was 72 per cent which means an average wastage of 28 per cent annually after one year of study ; of those that passed the first year B. Sc. and studied along with the failures of the second year B. Sc., again only 62 per cent passed the final B. Sc. examination, so that there was a further wastage of 38 per cent at the end of the second year, thus giving a total wastage of about 50 per cent at the end of two years. What is true of Lucknow and Allahabad is more or less true of other universities. For example, at Gauhati the annual percentage of *failures* at the B. A. and the B. Sc. stage was 62 per cent, at Patna 48 per cent, at Utkal 40 per cent, at Agra 35 per cent, at Banaras 29 per cent and at Bombay 28 per cent. This annual wastage of 28-62 per cent at the first degree stage is as bad as, if not worse than, at the intermediate examination. In England where the universities make their admissions very carefully, the annual wastage at the first degree stage is seldom more than 10 per cent. The embarking of a student on a university course is a serious enterprise by the student

and a big investment by his parents, by the university and by the society as a whole, and therefore the risks of wastage should be reduced as far as practicable. Intellectual work is not for all, it is only for the intellectually competent. Our universities should realize that every student who is admitted to a university has a right to assume that the university is prepared to see him through, if he has ordinary ability and works diligently ; he and his parents can rightly ask, " why is this large percentage of failures ? " Either he has not the necessary ability and the university should not have admitted him, or he does not do his work honestly, or the university teaching and examinations are faulty.

23. *Large Percentage of Third Divisioners.*—Not only is the percentage of passes low, but we have found that amongst the passes, the percentage of third divisioners is very large. The following table gives the number of passes in the three divisions and the percentage of 3rd divisioners at the B. A. examination of some of the universities during two recent years[1] :—

B. A. Examination.

	1944				1946			
	I	II	III	Percentage of 3rd divisioners.	I	II	III	Percentage of 3rd divisioners.
Agra	13	246	548	67·9	15	586	910	60
Allahabad	10	200	259	55	17	295	398	56
Andhra	16	44	235	80	37	62	325	76·6
Banaras	1	59	74	55	7	70	105	57·6
Bombay	49	265	946	78·8	54	364	1,517	78
Calcutta	27	550	2,066	78	132	..	1,553	82
Lucknow	4	76	262	76·6	5	96	293	74
Madras	66	182	1,047	80	69	144	1,044	83
Punjab	116	645	1,846	70	111	599	2,000	74

That 55 per cent to 83 per cent of passes at the B. A. examination should be placed in the third division indicates a sorry state of affairs and is a sure index of the low average quality of our graduates. In a well-conducted examination, where the teaching has been good and the candidates have prepared well, the vast majority

[1] Figures for this table and the next have been supplied by the statistical section of the Ministry of Education.

of candidates will pass in the second division. Human nature in the species, as in the individual, tends to bulge always in the middle, and cases of exceptional merit and exceptional demerit are relatively few. That in our university examinations the bulge should be below the middle line corroborates the observation made to us that our students put in the minimum amount of effort to secure a pass and do not care in most cases to secure a good class.

24. *The B. Sc. Results.*—The B. Sc. examination results are similarly analyzed below :—

B. Sc. examination.

	1944				1946			
	I	II	III	Percentage of third divisioners.	I	II	III	Percentage of third divisioners.
Agra	*18	114	91	40	*34	197	60	20
Allahabad	*26	59	50	37	27	48	64	46
Andhra	11	36	108	70	30	49	85	52
Banaras	*10	62	54	43	*13	77	52	36·5
Bombay	*79	320	306	43	41	389	670	60
Calcutta	193	..	488	72	200	..	675	77
Lucknow	*6	34	21	34	*15	65	48	30
Madras	102	161	240	49	112	174	350	55
Punjab	..	75	224	75	1	93	273	74

It will be seen that the B. Sc. results are slightly better than the B. A. results in that the percentage of third divisioners is 20 per cent to 75 per cent as against 55 per cent to 83 per cent in the B. A. Further, in eight examinations (marked with an asterisk) out of a total of eighteen, the results are normal and the bulge is rightly in the middle. This normality is no doubt due to restricted and more careful admissions, smaller numbers of students, greater amount of individual attention paid to them in the laboratories as also to the fact that examinations in science subjects are more objective in character than those in the Arts subjects.

25. *Percentage of Marks for a Pass.*—In most universities the percentage of marks required for a pass at the B. A. and the B. Sc. examinations is 36 per cent, 48 per cent marks securing a second division and 60 per cent a first division. We consider that these percentages are low and that we must exact a higher standard of achievement at these examinations from our graduates. We

recommend that the pass percentage at all first degree examinations should be raised to 40 per cent, 55 per cent securing a second division, and 70 per cent a first division. As we have recommended elsewhere, credit should be given for class work through all the three years of the degree course.

26. *Average Low Standard of Experimental Work.*—Special mention must be made of the fact that the average standard of experimental and practical work in both physical and biological sciences is not high at many universities. At some universities practical work was neglected at the intermediate stage because there was no university practical examination till a year ago. Sufficient demand is still not made on the students in skilful and efficient manipulation of apparatus and in making accurate observations. We should ensure that our students find pleasure in the use of their hands and fingers in delicate manipulations. Although in several universities the syllabus prescribed appears considerable on paper, the actual work done does not come up to a high standard, either in theory or in practical work. On comparing the question papers in science subjects of the M. Sc. examinations of several Indian universities with those of Part II of Cambridge Tripos or Honour School of Oxford one cannot fail to notice that our examination standards do not come up to those of the best of the British universities.

VII.—Causes of Low Standards, Low Percentage of Passes, and Suggested Measures of Reform.

There are several causes which contribute to the low average quality of our graduates and the low percentage of passes at the B. A. and the B. Sc. Examinations, but the principal ones are the following :—

27. *Overcrowding in Colleges.*—During the last 10 to 15 years there has been a growing pressure for an increase in the number of admissions at the universities, but unfortunately, this wide and eager demand for university education is not proportional to the capacity to profit from such an education. The size of a college or a teaching university is determined by the number of students who can be accepted without a lowering of standards. Whatever may be done, in a burst of public enthusiasm, to expand university education, nothing should be allowed to lower the quality of work at the universities, and size, beyond a certain point, undeniably lowers the quality. A college or a university is like a living cell ; once it reaches a certain size, it must either divide or die. The admission of a large number of students in response to popular demand without the necessary staff, class-room and hostel accommodation and equipment has made it impossible for most colleges and universities to give full

education to their inflated undergraduate population. This factor, more than any other, has undoubtedly been responsible for the lowering of our standards. To quote Abraham Flexner, " bigness is almost necessarily fatal to greatness ".

28. *Resulting Evils.*—Some of the colleges we have visited have on their rolls *five* to *ten* times the number of students they could properly educate. They have neither adequate class-room space nor laboratory accommodation. The staff is miserably paid and we found that several teachers lectured at two or three colleges to eke out a living wage. In one of the colleges the management was saving 1·75 lacs a year on the running expenses of the college. This is an extreme case but we have found that, with notable exceptions, there is a widespread tendency in colleges and universities, specially private colleges, to increase their enrolment in order to augment their fee income.

One of the harmful results of large numbers and the average low quality of undergraduates in the first degree classes is that the abler and more capable students suffer; they fail to get the educational opportunities they deserve. Teachers have to teach down to the level of the average ; in justice to the majority they are unable to raise questions or employ methods designed to call forth mental effort from those students who are capable of being highly trained ; consequently the more promising are kept back by the less intelligent and there is much waste of good material.

29. *Reduction of Numbers Recommended.*—Every college in an affiliating university and every teaching university should deliberately fix a maximum limit to the number of students it admits every year. This maximum limit will vary according to the size of the building, the number of teachers, laboratory space, hostel accommodation, etc., but the limit must be fixed and adhered to, if the quality of education is to be raised. It is the duty of the affiliating universities to fix and to enforce these limits on their colleges, and for the teaching universities to fix these limits to maintain proper standards.

30. *Limitation of Number in U.P. Universities and Colleges.*—We heard with satisfaction that at a recent meeting of the vice-chancellors of the universities in U.P., it was decided that the teaching universities of Lucknow and Allahabad should not have more than 3,000 students in their Arts and Science faculties, while degree colleges affiliated to the Agra University should not have more than 1,000 students. We commend this move to other universities and colleges. For the present, however, the maximum number of students in an affiliated college will have to be 1,500 for some years.

VIII.—Working Days and Vacations.

31. *Insufficient Number of Working Days.*—The number of actual working days in the year in most colleges and universities is insufficient. At one university the number was as low as 120, which meant that students and teachers worked only for one-third of the year. Further, on account of the large number of stray holidays during the session, the continuity of work is broken and consequently the total output of work by teachers and students remains low. While it is necessary to close the colleges and the universities at most places for ten weeks during the season of intense heat, we must make the best use of the remaining 42 weeks of the year. In American universities, most of which work on a two semester (term) basis, each semester consists of about 91 working days and 12 examination days, so that there are more than 180 working days besides examination days during the year. Generally, the only holidays they have are 15 days of Christmas, 1 Thanks giving day, 10 days of spring recess and 13 to 14 weeks of summer vacation. The following table gives the number of working days, *besides examination days*, at some of the American universities during the session 1948-49 :—

1. Harvard	172	working days.
2. Pennsylvania	174	,,
3. Michigan	182	,,
4. Johns Hopkins	188	,,
5. Vanderbilt	216	,,

32. *Minimum of 180 Days, Exclusive of Examination Days.*—We recommend that the university session be divided into *three* more or less equal terms, each of 10 to 11 weeks' duration, separated by two short vacations of two or three weeks each and one long vacation of ten to thirteen weeks. All casual holidays during the currency of each term should be severely curtailed. Every college and university should so arrange its sessional work as to ensure a minimum number of 180 working days, *exclusive of examination days.*

33. *Maximum Utilization of Working Days.*—Not only should there be an increase in the number of working days, but it is also necessary that each day should be utilised to its maximum. There are teachers and students who attend the university only for two to three periods (100 to 150 minutes) a day. While there are conscientious teachers who keep their lectures up-to-date by reading and research, there are quite a number of others who deliver the same lectures, prepared years previously, year after year. It is

these latter who give a bad name to the profession of a university teacher and lead to the criticism that university teaching is a soft job. At one of the universities we were told that every teacher has to be on duty at the university for 6 hours a day—he may either teach or work in the library or laboratory. This may be repugnant to some of the teachers, but there is no doubt that some kind of check is necessary for teachers who do not realize their obligation to engage in research and keep themselves up-to-date in their knowledge.

IX.—Methods of Instruction : Lectures.

34. *The Lecture Method.*—The common method of instruction at our universities is by mass lectures, but unfortunately at most places this is not supplemented by any regular work on the part of the individual student either by way of preparation for the lecture or by library work after the lecture or any tutorial or seminar work. There is no doubt that some teachers make very effective use of the lecture method for imparting instruction and their lectures are well-prepared and interesting, but at several places lectures consist merely of dictation of notes. This latter method cannot be too strongly condemned as it deprives the students even of the practice of trying to understand the lectures and taking down their own notes, to be supplemented by diligent students by what they read from books afterwards.

At the other extreme from the note-dictator is the lecturer who is carried away by his fluency and makes of his lecture a public oration. If the lecturer depends only upon his eloquence for keeping his students interested, he will rarely find them making the best use of his discourses. So far the university and college lectures have been mainly delivered in English and in many cases the students were unable to follow the lectures, because of their inadequate command over English and correct pronunciation. This state of things will undoubtedly change when lectures are delivered in a more familiar language, but even then the lecturer has always to keep his eye on the audience and see to what extent the students are responding to his ideas. The lecture has therefore to be punctuated (*a*) by interrogating the students on points which are significant, and (*b*) by jotting down some of the important points on the black-board. This latter may not be necessary when the students acquire the habit of making their own notes of the lectures but at present very few of them are able to do so. In a degree college one has frequently noticed the lecturer adopting the same method with his Intermediate and B. A.

students. This is obviously a mistake as the method of lecturing has to change from one class to another according to the intellectual equipment of the audience. The main point is that the lectures should help the students in getting a quick and firm grasp of the essentials of a subject and in serving as a guide to profitable reading in it.

35. *The Need for Written Exercises.*—At several places we found that there were neither tutorials nor terminal examinations, so that a student got through his two years of study without having done a single written exercise, and his very first written exercise was the answering of his papers at his final examination. He has had no practice whatever in writing and no wonder he writes badly, his answers are not properly arranged and his facts are not marshalled in proper sequence. It is necessary to emphasize that, throughout the university course, teachers should expect some written work of every student periodically, preferably once a week or fortnight. On the whole, a student will do what the teachers expect of him and it is an unfortunate fact that the will to work has gone down both amongst teachers and students. The habit of putting in honest intelligent work consistently throughout the session and leading "a life of strenuous endeavour" must be cultivated by university students, and if the teachers as a body pull together and restore a sense of duty and responsibility amongst their pupils, the whole tone of university work will improve.

36. *Elementary Teaching.*—In this connection we may note one point about teaching the lower classes in the universities. There is a tendency in the universities to look down upon elementary teaching and very often the first introduction a new entrant to a university gets to his subject of study is through the most inexperienced member of the staff. We regard it as essential that the more experienced teachers, preferably the professor or reader, should deal with the fundamental first year's introduction to university study so that the student's interest and enthusiasm for his subject are awakened from the start and kept alive during his stay at the university.

37. *Text-Books.*—One of the evils of the present method of instruction is that it is focussed too much on text-books. This evil is most pronounced in the study of the languages and therefore it has become almost a racket. A text-book is prepared with very little of effort as it consists of a number of pieces selected from different authors, a few copy-right pieces being included by permission to prevent the pirating of the selections, and then the publisher and the author do their best to get the book prescribed by a university or a board. Once the book is prescribed, the publisher and the author

are assured of a good return on their investment but the poor student does not have a fair deal. The standard lecture in a language class is centred on the prescribed text-book, the teacher reading through the book line by line, taking pains to wring the sense out of every line and word and leaving no sweetness in the best literary work. In other subjects, too, the evils of the text-book system are manifest. In History, for example, the student and the teacher know that the questions in the public examinations will be set from the prescribed works and the teacher must make it a point to summarise the books for the benefit of his students in great detail, while the student knows that the best prospect of success in the examination is through cramming up these summaries, or better still, the book itself. This practice extends even to Mathematics and Science subjects. The natural result of the text-book system is that the students cannot be genuinely interested in a subject and cannot extend their knowledge of it. They are prevented from developing their powers of judgment as they are taught to depend upon a borrowed stock of ideas.

38. *Compulsory Attendance.*—Compulsory attendance at lectures has been a point of controversy in our universities. At present in most universities, students are required to attend compulsorily 75% of the lectures in all classes including post-graduate ones before they are allowed to appear in public examinations. This compulsion makes the lectures distasteful for many students and the lecturer has not got the same impetus to make his lectures interesting and useful as he would have if the lectures were optional. On the other hand, conditions in our universities being what they are, an immediate change-over from compulsion may produce confusion. The best way would be to make attendance at lectures optional for post-graduate students who are sufficiently mature to look after their own interests and can judge for themselves what is beneficial and what is not. The younger students have probably to undergo compulsion for some time to come as a part of the university discipline.

39. *Private Candidates.*—Closely allied to the problem of compulsion is that of private candidates. Certain categories of students are allowed to appear at public examinations without attending lectures at recognised institutions. These categories generally include school teachers, others connected with education and sometimes women. This is justified on the ground that people connected with educational work have sufficient intellectual interest to go through the curriculum on their own, while in many parts of the country social conditions prevent women from attending co-educational colleges, there being no women's colleges within easily

accessible limits. We have received representations urging the extension of this system as there are many young men engaged in various professions who wish to improve their minds and their material prospects by studying at home and taking examinations offered by universities. It is urged against this that the increase in the number of private candidates will bring down the standards of our degrees. The percentage of failures among private candidates is much higher than among regular students and if private candidates are allowed to be more numerous and equal to the number of regular students (as they are likely to be, if the privileges are widely thrown open), then the examiners must lower their standards, according to the mental equipment of the majority of the candidates.

40. *Evening Colleges.*—A *via media* has been suggested for the benefit of the workers who are keen on improving their qualifications. In the university of London, Birkbeck College has been working for 125 years for the " internal " students, who, by reason of the fact that they are engaged in full time paid employment during the day, are unable to devote more than their leisure hours to study. The hours of work are in the evening, from about 5-30 to 9. The facilities provided at the college are intended primarily for those taking full courses in preparation for degrees but, subject to the concurrence of the relevant heads of departments, ' occasional ' part-time students are also admitted, provided they have the proper preliminary education for following the instruction in the college. In the larger cities of our country, we may consider the feasibility of establishing institutions of this type in Arts and Science for full time workers. These institutions may have to use some of the buildings of the ordinary colleges, but it must be clearly understood that the staff has to be a separate one, as no teacher can possibly work in the evenings in addition to teaching day classes. Not only should the teaching staff be separate but all employees of the evening institutions have to be whole-time, and the college must have an organisation absolutely separate from that of the day institutions. Moreover, it may be necessary to lengthen the duration of the courses for any particular degree at these evening colleges, because the student will not be able to follow up the lectures with much of home work as a whole time student is able to do. Thus if the ordinary B. A. and B. Sc. courses are three-year ones for the day students, they should extend to four years for the evening students.

X.—Tutorials and Seminars.

41. *What is Tutorial Instruction ?*—Tutorial instruction usually means that a student goes to a teacher, at least once a week for private or personal advice and instruction. At Oxford originally

one student went alone but now the enormous increase in the number of students has made it necessary to give tuition in small groups, while at Cambridge, where the tutorial is called " supervision ", students go in pairs. In India tutorial work is done only at very few colleges and universities ; only at some places are the tutorial groups of a manageable size, while at others as many as twenty or twenty-five students form a group—this is really not a tutorial but merely another lecture-class in which the tutorial loses its essential character. We do not think tutorials can be employed successfully in groups of more than six students. But in most colleges and universities there is no attempt whatever at providing any tutorial guidance. This is a serious deficiency and must be made good at a very early date. We consider that attendance at tutorial classes should be made compulsory, even more so than at lectures.

42. *What Does a Tutorial Involve ?*—While tutorials may involve moral and social guidance or helpful advice of any kind, their principal function is a kind of intellectual midwifery. In an intimate way, the teacher directs and develops the thought process which must always be an activity of the student himself. The learner discovers how to analyse, judge and evaluate, while the tutor leads and criticizes as the pupils try their own wings and pursue their intellectual flights. The tutor sometimes advises about the selection of a field of study, lectures to be attended and practical questions relating to the student's studies. The amount and kind of service rendered by the tutor varies with the type of the subject, the capacity of the student and the stage of his advancement in the course. Tutorial as a teaching device is employed as supplementary and subordinate to the lectures.

43. *Object of Tutorials.*—Tutorials are as well adapted to natural sciences as to the humanities and social sciences. The essay is the usual method of presentation, the basis of discussion and criticism in the " Arts " subjects, while in the sciences, answers to a few questions as well as an essay in advanced stages of a student's career form good material for a tutorial. The object of the tutorial is to achieve effective supervision of the individual student's work and progress. The student should not only acquire factual information and develop the habit of independent thinking, but should also learn to present his ideas accurately in correct language and in an orderly manner. In a small group an enterprising student will sharpen his wits in discussion and profit by the mistakes of others as well as his own.

44. *Teaching Staff for Tutorials.*—Under ideal conditions only experienced teachers ripe in scholarship, adapted by temperament for tutorial work, and not heavily loaded with other duties should be tutors. Unfortunately, the present state of our universities, overcrowded with students and under-staffed as they are, does not permit of such a selection. In a few colleges with limited enrolment and relatively adequate staff, selection of tutors can be made, but in most colleges and universities the entire teaching staff will have to be drawn upon for tutorial work, even though this may be repugnant to some teachers and not satisfactory to all students. Difficulties will be removed and certainly lessened to a great extent if the teaching staffs are strengthened both in quantity and quality as recommended by us elsewhere.

45. *Tutorials for all Undergraduates.*—We have found that the rank and file of students in India are suffering severely from lack of personal contacts with the teaching staff. There was practical unanimity amongst our witnesses that personal development as an objective of education and contact between teacher and student were sadly neglected. We therefore strongly urge that tutorials should be established for all undergraduates, both in the pass and the honours courses. At the post-graduate level seminars should replace the tutorials.

46. *Tutorial is not Coaching for Examinations.*—Tutorial work should not be allowed to degenerate into an attempt to " spoon-feed " or coach students how to " get by " examinations. This will be a travesty—tutoring at its worst—and will be really harmful to the education of a boy or a girl. We have stressed the point that education is growth and not passive receptivity. The real teacher is like the gardener who nurtures the plant and not a carpenter who cuts pieces of wood to fit into certain locations or a painter who covers them with an exterior coat of paint. Unless the tutor stimulates thinking rather than mere memorizing, deeper intellectual interests rather than aversion to thought, better perception of values, rather than inappreciation, he serves no useful purpose but may nourish wrong habits which will be difficult to eradicate. The tutor has to bear in mind that he is not merely teaching a subject, but is educating men and women to take their places as intelligent citizens of the nation.

47. *Maximum Hours of Work for Teachers.*—The tutorial may sometimes be a hardship to the teacher if he is already carrying an overload of lectures and other administrative and routine duties. It has been argued that the burden of tutorials will interfere seriously with research which teachers must do, if they have to function as

good teachers. But we have met teachers in India, even of the rank of professors, who have a considerable amount of research work to their credit and have at the same time taken their full share of tutorial work with their undergraduate pupils. Such teachers, who are not many, should serve as examples to others. At Cambridge, six to ten hours of tutorial work per week besides lecturing, research and administrative duties are not considered to be too heavy a load by the teachers themselves. We do feel, however, that teachers cannot normally carry over 15 hours a week of teaching and tutorial combined and yet be productive scholars.

48. *Practical Problems.*—In English universities, many tutors live in colleges, and students have no difficulty in getting to them in the evenings when lectures and other duties are over. In India also, in some instances, members of the staff reside in hostels or university quarters and students can well meet them at convenient hours, but this ideal arrangement seldom exists and, for the most part, students must take their tutorial work at some time between ten o'clock in the morning and five o'clock in the afternoon. Further, many teachers do not have small offices or private rooms necessary for efficient tutorial work. If they desire effective results, universities should put up additional buildings in which every regular teacher of the university or college will have a private room of his own for tutorial and other purposes. While it may not be possible for a tutor to read all the essays written by students with them, it is essential that all essays must be read and carefully corrected, and the mistakes, omissions, etc. discussed with them. The number of essays per month may vary from subject to subject, but it should be the duty of the tutor to make an annual budget of tutorial work, keep a diary of tutorials himself, and insist on students keeping a diary of tutorial work to be completed in a year. He may discuss outlines of essays with them before they are written or may ask them to make summaries of chapters of a book. It should be the duty of each head of a department to ensure that tutorial work is properly planned and carried out by his colleagues.

49. *Seminars.*—The term seminar is sometimes confused with or used interchangeably with the tutorial, but there is a distinction. In the tutorial we have a relationship in which a master is developing a novice, while in a seminar a group with maturer minds working in one subject engages in a joint discussion. The technique involves the launching of theses of a penetrating and provocative character upon which all members of a group have opportunity to express themselves freely around a table. The objectives are to stimulate discussion, clarify issues, and arrive at the truth through co-operative approach. Seminars in this sense are not adapted for

use at the undergraduate level but should be employed for the development of post-graduate students pursuing work for Masters' and Doctors' Degrees.

XI.—Libraries.

50. *Importance of Libraries.*—Teaching is a co-operative enterprise. Teachers must have the necessary tools for teaching purposes in the shape of libraries and laboratories as also the right type of students. The library is the heart of all the university's work ; directly so, as regards its research work, and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as its laboratories, while for humanistic research the library is both library and laboratory in one. Training in higher branches of learning and research is mainly a question of learning how to use the tools, and if the library tools are not there, how can the student learn to use them ? President Truman's Commission on Higher Education says, " The library is second only to the instructional staff in its importance for high quality instruction and research ". Both for humanistic and scientific studies, a first-class library is essential in a university.

51. *Present Unsatisfactory Position.*—While at a few universities the libraries are fairly well-stocked, grants for their upkeep are more or less reasonable, arrangements for lending books to teachers and students are efficient and the reading room space is reasonably adequate, it was distressing to find that in most colleges and universities the library facilities were very poor indeed. Not only was the provision for keeping the library up-to-date very inadequate, but at one place no attempt had been made to weed out old and obsolete books or old editions and replace them with new editions of the same books. At another place different scientific journals had been subscribed at different times and then discontinued, with the result that not a single set was complete or up-to-date. At still another place the library was just a mass of books stacked somehow, with no space or arrangement for seats where readers could sit down and have even a look at books with ease and comfort. But the poorest libraries were those of professional colleges, *e.g.*, the medical, the engineering and the agricultural colleges. That many teachers in medical colleges care more for their private practice than for teaching and research is faithfully reflected in the grossly inadequate library facilities at almost all our medical colleges. The libraries at the engineering and the agricultural colleges were also poor because teachers took little interest in research.

52. *Annual grants for Libraries.*—There is no doubt that in most of our universities the annual grants for libraries are very inadequate. One of our witnesses stated that on a comparative study of the library provision in the chief universities of the world it is found that the annual grant for a good library should be about $6\frac{1}{4}$% of the total budget of the university or Rs. 40 per student. We have compared the library grants of some fairly good university libraries in India and find that their annual grants for the year 1948-49 range from 2·7 per cent to 6·5 per cent of their total budgets. This includes the grant for books and periodicals as well as the expenditure on service, administration and maintenance. The American Library Association recommends Rs. 60 to Rs. 85 per student, while Truman's Commission recommended Rs. 65 per student. It has not been sufficiently realized that for advanced scientific work, scientific periodicals are more important than books. As scientific books and periodicals are very costly and in science subjects a great leeway has to be made up in India, we recommend that universities and colleges should work up to an optimum of $6\frac{1}{4}$% of the total budget or Rs. 40 per student as the annual grant for their libraries. As it will not be possible for a library to purchase the increasing number of good publications which come out year after year out of its fixed annual allotment, a special non-recurring grant should be made once in *five* years to cope with the arrears of books and journals. Nor must university libraries forget the place of manuscripts in a collection of books. A good part of the research work in Indian Philosophy, in Indian History and in Indian Literature is dependent upon the examination of unpublished manuscripts. Each university must attempt to obtain as many of the old manuscripts as it can manage and a special grant for the purchase of manuscripts has to be included in the budget of every university library.

53. *Open Access System.*—Most libraries do not allow open access. It should be remembered that undergraduates have to be educated in the use of the library as in so many other fields. They should be allowed to go at will from stack to stack and browse among the books to their hearts' content in their free time. Except for a few rare and precious books, all books should be open to them. It is necessary that there should be only one entrance and exit and that a junior assistant should carefully check all books taken out of the library. In every university there should be a carefully planned open access system.

54. *Hours of Work.*—In many universities the library is open only from 10 A.M. to 4 P.M.: this is obviously wrong as the library should not close as soon as the lectures end. It is precisely after

the lecture hours that the libraries need to remain open. We would recommend that all university libraries should remain open for 12 hours a day for the seven days of the week and throughout the vacation, so that undergraduates can do a good deal of their reading there and the staff and postgraduate students can get long stretches of time for their research work in the library. The library staff will naturally have to work in shifts and they will get their holidays by turns.

55. *Organisation of a Library.*—The exact organisation of the university library will differ at different places, but the ideal to be aimed at is a large central library with departmental libraries in organic connection with it. The central library should maintain a complete card catalogue of all the books in the university, indicating clearly which books and periodicals are available in the central library and which in several departmental libraries. It has been found by experience that it is best that the departmental libraries should contain only those books and journals which are to be used by the teachers and the postgraduate students and that all books for undergraduates should be available in the central library.

56. *Staff.*—The library should have adequate and well-qualified staff. Each library requires several grades of employees. At the top will be a man of the calibre of a university professor who has specialised in some aspects of library science, after having done a full degree course and who has capacities for organisation and management. In the next grade will be his deputies, who will look after different sectional activities of the library like cataloguing, reference work, reading room management, etc. Then finally there must be numerous assistants helping in all activities from the accessioning to the issuing of books. The top man must have qualifications corresponding to a Doctorate in Library Science ; the deputy librarians should have obtained degrees after undergoing training at a university, while the other assistants should possess diplomas, the courses for which extend over at least one year. We must have at least one university centre in each province offering facilities for training for the diploma courses. We may not be able to start degree courses in more than three or four universities at present. Care must be taken to see that if there are only three centres they should be located in different zones or regions.

Sufficient attention has not yet been paid to the reference service in the libraries of our universities. We have already indicated that lectures and tutorials must be supplemented by work in the library. The teacher gives the students some guidance as regards supplementary reading but the reference assistant, if he is properly qualified, will be in touch with the teachers and guide the students

to the proper volumes and the proper pages in each volume, which would be helpful to them. These reference assistants can be of help not only to the students but also to the teachers in their special subjects of study. Bibliographical and documentation work has to be developed in order to make the libraries proper centres for research.

57. *Students to be Made Book-Conscious.*—Even when the central library is fairly well stocked and affords facilities to its readers in the way of a complete catalogue, long hours of work and unrestricted access to the book-stacks, it is necessary that the student himself must be made book-conscious. He must be encouraged by his teachers to possess his own small library and educate himself by his private reading. Right from his school he should be convinced of the value of book-buying. The joy of possessing a book and having it continually at hand and making it a familiar friend by careful and constant reading is something he must learn by the precept and example of his teachers. It is an essential part of university training to learn how to read and understand writing that is understandable by educated adults, and the only way to learn this is to read such writing.

58. *Grants to Teachers for Books.*—A large number of teachers cannot afford to buy books or subscribe for journals to keep themselves up-to-date. They have no good libraries of their own. We would suggest that teachers of lower grades should be given a grant of Rs. 100 a year for buying books with a condition that they supplement it by an equal amount.

XII.—Laboratories.

59. *Buildings.*—As scientific teaching and research are of comparatively recent introduction in this country, science laboratories of most colleges and universities have been built only during the last 40 to 50 years. Laboratories built in the earlier years served their purpose well in those days, but have in several cases become unsuitable for modern needs. Some of them can be modernized by providing better ventilation and by a renewal of fittings, but others need radical alterations or have to be built anew. The newer laboratories built during the last 25 years are generally well-designed but all of them are not of the requisite standard of convenience and comfort. In some cases the engineers have just built a series of rooms without regard to the use they are to be put to and have then tried to fit the laboratory furniture into it. Provision for modern sanitary conveniences are either absent or inadequate and in some cases there are no electric fittings at all in the laboratories. On the whole, laboratories designed and built by

specialist firms are very good indeed. It is desirable that well-planned standard designs of laboratories in different subjects like Physics, Chemistry, Biology, Geology and others should be available for the guidance of schools, colleges and universities.

60. *Fittings.*—In most new laboratories the fittings are well-designed and well-planned for the comfort and convenience of students and teachers, but in some biological laboratories we found that laboratory benches and stools were inconveniently high, and the students sat most uncomfortably with their legs dangling in the air, several inches above the floor. Lecture theatres are well-designed only at a few places ; at others these theatres are badly designed, go vertically up to the roof and look ugly ; the seats are uncomfortable for students and the general set-up trying for the teachers. Unfortunately lecture theatres even in some engineering colleges are ill-designed. Engineers in India should give time and thought to educational buildings, specially laboratories, and some of them may usefully specialise in the designs and fittings of different kinds of school, college and university laboratories. The civil engineering departments of some of our engineering colleges should specialize in educational buildings, and produce standard designs of buildings, fittings and equipment of laboratories and lecture-theatres.

61. *Equipment.*—Most teachers of science in colleges and universities complain of inadequacy of equipment. There is no doubt that modern teaching and research in scientific subjects require adequate and even costly equipment. Modern scientific research is largely a matter of evolving new techniques, and apparatus for new techniques is costly and can only be provided by making adequate capital and recurring grants. During the years of war, as also during the post-war years, most scientific departments in the universities have not been able to import apparatus and equipment and even now cannot get them in sufficient quantity or at the required time. The annual grants which were fixed for needs of pre-war years are proving more and more inadequate because of the rise in prices of apparatus, and it has therefore become necessary that these grants should be suitably enhanced. At some universities unspent balances of annual laboratory grants are carried over and added to next year's grants : this is a very salutary practice and should be followed by other universities. It will automatically put a stop to hasty expenditure on things of doubtful utility and value during the month of March in order not to allow any part of the grant to lapse, and will at the same time encourage careful and wise selection of apparatus.

62. *Laboratory Workshops and Technicians.*—At many places we found that laboratory workshops did not come up to the requisite standard. For proper and efficient working of all laboratories the need for workshop facilities has not been adequately realized. Good technicians cannot be secured at the old grades of salaries and it has become necessary to revise grades to secure and retain the services of competent technicians. Workshop equipment in the way of lathes, tools, etc. should be made available for repair of apparatus. Students should be made increasingly to interest themselves in the making of scientific apparatus, so that some of them can make a living in the scientific instruments industry which is practically non-existent at present in our country.

XIII.—Recommendations.

63. We recommend :—

(1) that the standard of admission to the university courses should correspond to that of the present intermediate examination, *i.e.*, after the completion of 12 years of study at a school and an intermediate college ;

(2) that in each province a large number of well-equipped and well-staffed intermediate colleges (with classes IX to XII or VI to XII) be established ;

(3) that in order to divert students to different vocations after 10 to 12 years of schooling, a large number of occupational institutes be opened ;

(4) that refresher courses be organized by the universities for high school and intermediate college teachers ;

(5) that to avoid overcrowding at universities and colleges, the maximum number in the Arts and Science faculties of a teaching university be fixed at 3,000 and in an affiliated college at 1,500 ;

(6) that the number of working days be substantially increased to ensure a minimum of 180 in the year, exclusive of examination days : with three terms, each of about 11 weeks' duration ;

(7) that lectures be carefully planned and supplemented by tutorials, library work and written exercises ;

(8) that there be no *prescribed* text-books for any courses of study ;

(9) that attendance at lectures be compulsory for undergraduate students as at present, and that private candidates of only certain

categories be allowed to appear for public examinations. An experiment should, however, be made with evening colleges for working people ;

(10) that tutorial instruction be developed in all institutions imparting university education in the following manner :—

(*a*) students should report to tutors in groups not exceeding 6 in number ;

(*b*) tutorials should be made available to all under-graduates, both pass and honours ;

(*c*) tutorials should stimulate the mental development of students and should not become mere coaching for examinations ;

(*d*) if tutorials are to succeed, the teaching staff should be improved in quality and quantity.

(11) that university libraries be greatly improved by :—

(*a*) larger annual grants ;

(*b*) the introduction of the open access system ;

(*c*) longer hours of work ;

(*d*) better organization ; and

(*e*) a well-trained staff which should include reference assistants.

(12) that the laboratories be improved in buildings, fittings, equipment, workshops and technicians.

CHAPTER V

Courses of Study : Arts and Science.

I.—Introductory.

1. The Functions of Courses of Study. 2. Phases of Education.

II.—General Education.

3. The Functions of General Education. 4. The Effects of Over-Specialization. 5. The Value of Well-Balanced Education. 6. Increasing Interest in General Education. 7. The Content of General Education. 8. The Approach to General Education. 9. Importance of Selection of Material for General Education Courses. 10. Science in General Education. 11. The Humanities in General Education. 12. General Education in Secondary Schools. 13. General Education in Colleges. 14. First Degree Course : Arts and Science. 15. The Duration of University Studies.

III.—Introduction of Courses in General Education.

16. Reading Material and Syllabuses for General Education Courses. 17. The Introduction of General Education.

IV. 18—*Recommendations*

I.—Introductory.

1. *The Functions of Courses of Study.*—In the actual processes of living there are no sharp boundaries between experiences in different fields. Any experience in one field is associated with and influenced by experiences in various other fields. Thus life is one total, complex fabric. Yet in preparing for living by courses of study we find it to be convenient and economical to break up our interests into limited areas. There is danger that in time these limited areas of interest shall come to seem like little worlds of their own, each with its peculiar body of subject matter, and each being largely independent of all the others. Courses of study are essential expedients of formal education, but they should be recognized as nothing but an arbitrary though useful contrivance. Unless the vital inter-connections of all phases of experience are kept in mind, the convenient devices of courses of study may become barriers which prevent our realizing the unity of knowledge and experience.

2. *Phases of Education.*—So far as formal courses of study are concerned, higher education should have three main objectives. The first of these is *General Education.*—We think and judge and act on the basis of our information and experience. If these are very limited, then our world will be small and our judgments faulty. It is the business of General Education to make available to the student, and to inspire him to master, wisely selected information as to facts and principles, so that he will have representative and useful data on which to base his thought, judgment and action, and

will be aware of fields of interest and importance. In the modern world there is such a vast accumulation of knowledge that no person is capable in all fields of selecting what is most important for him to know. In general education it is the business of the best qualified men in each field to select from the great mass of knowledge in that field the most significant principles, and suitable cases to illustrate those principles, and to present them in a way which will make them most available to the student. The teacher in general education should not in preparing such material, think of his own field alone. Keeping in mind the total ground to be covered by the student in all fields, he should reduce his teaching material to such proportions that it requires no more than its fair share of the student's time.

The second objective of courses of study, *Liberal Education*, is preparation of the student for independent thinking, for critical inquiry and appraisal, and for creative and constructive thought and action. Liberal education does not call for separate institutions nor always for separate teaching programmes. The spirit of liberal inquiry should inspire all teaching. On this assumption it is not necessary to distinguish between general and liberal education. It is appropriate, however, that for mature students there shall be courses, seminars and research projects which have as a direct aim the teaching of the skills and disciplines and philosophy of free critical inquiry.

The third aim of courses of study is *Occupational Education*, that is, preparation of the student for his life work or for other specialized interests. Such courses are called vocational or technical or professional.

While these phases of education are inter-related and seldom if ever should be pursued in isolation from each other, yet we can better understand the suitability of courses of study if we consider general and professional education separately.

II.—General Education.

3. *The Functions of General Education.*—Higher education should not be looked upon as the acquiring of certain conventional accomplishments which mark one as a member of the educated class. It should be well-proportioned preparation for effective living in varied circumstances and relationships. The interests and opportunities and demands of life are not limited to any few subjects one may elect to study. They cover the entire range of nature and of society. That is the best liberal education which best enables one to live a full life, usually including an experience of mastery in some specialized field.

Just as a thrilling book is to an illiterate man only some paper with black marks on it, so to a person without general education the larger part of the varied and teeming interests of the world about him will be mysterious or meaningless or non-existent. The person with a narrowly specialized education is like a man who lives in a house with only one window, so that he can look out in only one direction. A general education should open windows in many directions, so that most of the varied experiences of his life, and most elements of his environment, shall have meaning and interest to him.

4. *The Effects of Over-specialization.*—The result of unbalanced university education has been described by Jose Ortega y Gasset in *Mission of the University.*

" Compared with the mediaeval university, the contemporary university has developed the mere seed of professional instruction into an enormous activity : it has added the function of research : and it has abandoned almost entirely the teaching of transmission of culture.

" It is evident that the change has been pernicious. Europe today is taking the sinister consequences. The convulsive situation in Europe at the present moment is due to the fact that the average Englishman, the average Frenchman, the average German are uncultured ; they are ignorant of the essential system of ideas concerning the world and man, which belong to our time. This average person is the new barbarian, a laggard behind the contemporary civilization, archaic and primitive in contrast with his problems, which are grimly, relentlessly modern. This new barbarian is above all the professional man, more learned than ever before, but at the same time more uncultured—the engineer, the physician, the lawyer, the scientist.

" The man who does not possess the concept of physics (not the science of physics proper, but the vital idea of the world which it has created), and the concept afforded by history, and by biology, and the scheme of speculative philosophy, is not an educated man. Unless he should happen to be endowed with exceptional qualities, it is extremely unlikely that such a man will be, in the fullest sense, a good doctor, a good judge, or a good technical expert. But it is certain that all the other things he does in life, including part of his profession itself which transcend its proper academic boundaries, will turn out unfortunately. His political ideas and actions will be inept ; his affairs of the heart, beginning with the type of woman he will prefer, will be crude and ridiculous ; he will bring to his family life an atmosphere of unreality and cramped narrowness, which will warp upbringing of his children."

Gasset quotes the Chinese philosopher, Chuang-Tsu of the fourth century B. C. ; " How shall I talk of the sea to the frog, if he has never left his pond ? How shall I talk of the frost to a bird of the summer land, if it has never left the land of its birth ? How shall I talk of life with the sage, if he is the prisoner of his doctrines ? "

While we may consider Gasset's statement to be immoderate, yet it is evident that the traditional pattern for higher education does tend to create narrow specialists. Unless a person's elementary and secondary education has been unusually fortunate, and except as he has active curiosity which leads him to educate himself in varied fields, the typical college graduate is largely ignorant outside of his own subject. So far as higher education is concerned, narrow specialization is frequently compelled by rigidly fixed curricula.

5. *The Value of Well-Balanced Education.*[1]—In his actual day by day life an average graduate is not primarily a zoologist or a chemist or an economist or a student of literature. His chief relationships are those of citizen, father, husband, neighbour, bread-winner, and those of an individual having many relationships with the physical world and with society. He has political, social, business and cultural interests outside his special field. Aside from the professional

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[1] This truth is emphasized in an editorial in the *Journal of General Education*, October 1947 :

" Some years ago studies of the relationship between undergraduate study and standing in the professional schools of Harvard University disclosed that those who majored in the natural sciences had no better records in medical school than other students. Nor did they achieve any greater eminence after graduation. Grades in the law school were similarly unrelated any particular pattern of undergraduate instruction. More recent studies at the University of Buffalo likewise show no positive relationship between the undergraduate major and success in the schools of medicine and dentistry. Likewise those who recruit promising college graduates for positions in business and industry are more concerned about the range of their intellectual experiences and the flexibility of their minds than about the amount of specialized instruction such students have had. Recognizing that deficiencies in general educational background will only in rare instances be made up after college, many industries are selecting future employees from among those who have had a good record and a rounded education, leaving such specialized training as is needed later to be learned at work.

" Even the success of the most competent specialist depends upon general capacities. The man of deep understanding, of rich culture, of flexible mind, will not long be at a disadvantage in competition with those who have merely acquired a vast amount of technical information. The dramatically swift success of the narrowly trained practitioner is ultimately overshadowed by the achievement of the person of philosophic grounding. "

Albert Einstein, who is frequently thought of as a specialist, has said of specialized education :

" I want to oppose the idea that the school has to teach directly that special knowledge and those accomplishments which one has to use later directly in life. The demands of life are much too manifold to let such a specialized training in school appear possible. The school should always have as its aim that the young man leave it as a harmonious personality, not as a specialist. The development of general ability for independent thinking and judgment should always be placed foremost, not the acquisition of special knowledge. If a person masters the fundamentals of his subject and has learned to think and work independently, he will surely find his way."

or other vocational training, which should be a part of every person's education, the preparation of our students should not be for a single purpose nor for any single element of living, but for varied phases of living. The various elements of education should be pursued in vital relation to each other, so that for any person the result will be the best practical all-round development, together with effective training in his own field of work.

6. *Increasing Interest in General Education.*—Scarcely any other educational movement in the Western world in recent decades is more far-reaching and significant than that away from premature or excessive specialization, and toward what is called general education. The American Council of Education, which is a council of all the chief educational associations in the United States, in reporting on its extensive five-year study of general education stated, " General education is the most discussed topic of college and university education today ". Among large American universities which require a " core programme " of basic courses for every student are Columbia, Chicago, Florida, and Iowa. Other universities and colleges have set up departments of general studies in which a student may do the general part of his work for a four year undergraduate college course. It is found that such courses serve as an admirable introduction to advanced study.

Among the suggestions for improving higher education which we have received during the course of our visits to the universities scarcely any has been more frequently or more vigorously presented than the need to escape from the extreme specialization which now prevails. From our own observations and study of the situation, we are impressed with the need for general changes in accord with these suggestions.

7. *The Content of General Education.*—The ways by which a person can get a general acquaintance with his world are fairly well known. Understanding of the physical environment is enlarged and deepened by the sciences of physics and chemistry, and by study of geography, geology, meteorology (the science of weather) and astronomy. The world of living things is given clearer and greater meaning by the study of biology, physiology and psychology. The affairs of humanity come to be more intelligible and interesting through study of man's make-up and background (anthropology), the records of his actions (history), his social behaviour and unofficial relations (sociology), his methods of meeting his material needs (economics), and his ways of controlling and organizing human relations (politics and government). The achievements of men in thought and feeling are preserved and disclosed in literature and the fine arts. Ability to deal with things and affairs with definiteness,

and to observe and think with exactness, is aided by mathematics. Finally, intelligent interest in human purpose, motive and direction may be assisted by a study of ethics, philosophy and religion. No one of these kinds of experience can be understood as an isolated subject, but each must be understood in its relation to others.

8. *The Approach to General Education.*—How to help young men and women to be best equipped for interesting and effective living in all these various relationships is the problem of general education. We should not overcrowd the curriculum or give a smattering of different subjects. The aim of general education should be to select from the vast total of human knowledge elements which are most significant and representative, and to present them in such a way as to lead to an understanding of controlling principles and chief classes of phenomena, with typical illustrations and cases; to the habit and capacity of objective critical inquiry; to creative thinking; to the habit of applying one's knowledge to the solving of his own problems; to an attitude of interest and curiosity which will be expressed in awareness and continued growth; and to current enjoyment of living.

In many cases efforts to achieve good proportion between the so-called humanities and science, and between general and vocational education, have been by means of expedients and devices, without clear thinking as to the aims being pursued. For instance, in general education there is a tendency to dismiss the field of "science" with the demand that a student take "some science subject" of his own choice, limiting his introduction to science to a single field. This may have the value of acquainting him with the scientific method and of giving him some familiarity with one limited area, but it does not serve the purpose of making him at home in the world he lives in. One may take a course in chemistry and yet be almost wholly ignorant of the biological sciences and of the physical environment as disclosed by physical geography, geology and astronomy.

As another illustration of reliance on arbitrary expedients and devices, there has been a tendency in Europe and America to devote the first half of a four year course to general education and the last half to specialization. A similar tendency is in evidence in India. This practice has some very undesirable results. From time immemorial boys and girls of fifteen years and older have craved to be at the work of their lives, or at least to be definitely preparing for it. To postpone satisfaction of that craving often results in a feeling of frustration and loss of interest, and very often in a half conscious rebellion against an educational process which seems to them to lack vitality. Vocational preparation should begin as early

in life as a boy or girl craves it, and should be closely associated with general education.

Another undesirable effect of the habit of using the first part of the university years for general education and the latter part for specialized education is that general education suffers by that arrangement. In the later years of specialization the general liberal interests tend to be forgotten, or to be looked upon as the relatively unimportant concerns of adolescence. Specialization comes to seem the really important part of education and of life.

General education and specialized or vocational education should proceed together. Specialized or vocational education may well begin even below the intermediate school, as soon as a boy or a girl shows a live interest in some field. On the other hand, some elements of general education should continue to the end of the period of college or university training.

Of boys and girls who continue schooling beyond the eighth year, a considerable number will continue for only a year or two. For them, years nine and ten should include a considerable element, at least a half of the total time, given to specific vocational training, and the remainder to general education. For those who plan four years of secondary school, but will go no further, the element of general education might vary from over a half of the time for the first year to about a third for the fourth year, the rest being given to vocational education. For students planning to continue to college and university, the greater part of the classroom time for the four years of secondary school may well be given to general education. Time spent in part-time practical work would not be included in any of these estimates, but only that given to the more formal academic programme. This time distribution, however, is not to be taken as final or rigid. It is stated here only as a suggestion and each college and university will have to work out the details of the scheme with reference to its special needs and specific character.

9. *Importance of Selection of Material for General Education Courses.*—In view of the limitless ranges of human knowledge, any effort to get a general view may seem utopian. To quote Whitehead, " A student should not be taught more than he can think about. Selection is the essence of teaching. Even the most compendious survey is only the rudest culling from reality. Since the problem of choice can under no circumstances be avoided, the problem becomes what, rather than how much, to teach ; or better, what principles and methods to illustrate by the use of information.... To the extent that a student becomes aware of the methods he is using, and critically conscious of his presuppositions, he learns to transcend his speciality and generates a liberal outlook in himself.'

The concept of all-round education requires rigorous and discriminating examination of the contents of every project, and of the course as a whole, to see that the more important elements are included and the less important eliminated. Such examination will radically change the contents of many courses now given in our universities, will eliminate some courses entirely, and will introduce others. In a live society that process of revision will never be complete. It is one of the most exacting in higher education and requires live interest, creative thinking and much freedom of exploration. It is greatly handicapped by such regimentation of teaching as now exists in our universities.

There is a common impression that the conventional degree of detail in which a subject is taught is reasonable and essential and that any lesser degree of detail would cease to be thorough teaching, and would be a smattering. On the contrary, the degree of detail in which a subject is taught has no necessary relation to scholarship. In some cases great detail is of the very essence of accurate scholarship. In other cases excess of detail may be a serious impediment to clear scholarly treatment. It was said of a great physicist that he had capacity to take a great mass of detailed information and to emerge with conclusions of clear, simple brevity. We have seen zoology courses in our universities so loaded down with taxonomic details that the student would have difficulty in getting over-all scientific concepts. We have seen other, much briefer, courses in which students were made acquainted with the methods of critical scholarship. General education, if wisely directed, will result in a new quality of mental range and grasp by helping students to understand general principles by means of pertinent cases.

10. *Science in General Education.*—As a part of general education for living, every step of education from primary school to the completion of undergraduate university work should include teaching of science. The place of science in general education should be to help the student to understand and to use the scientific method, and to have an active and intelligent interest in the whole of the physical and biological world, and to achieve those results without taking so much time as to crowd out other equally vital interests.

In each of the major fields of science the student should become acquainted with the basic vocabulary in that field, with the major concepts, and with typical cases or illustrations which will make the concepts real to him. The aim in science for non-science students in general education should not be to make the student a qualified scientist in each field, but to give him such introduction to each that his general reading and experience in that field will be interesting

and intelligent, and that his self education in each field shall be facilitated.

For students making some science their chief field an initial course in that science should commonly have a different treatment than that included in the general education of the non-scientific student. It may be more detailed, more rigorous, more in the nature of a foundation for later specialization in that field. The aims of all-round unified general education cannot be well achieved without loss of time unless this need is recognized for different kinds of science courses for science and non-science students.

11. *The Humanities in General Education.*—Whitehead writes, " The true task of education is so to reconcile the sense of pattern and direction deriving from heritage with the sense of experiment and innovation deriving from science that they may exist fruitfully together."

Each age tends to feel that its particular contribution to human life and culture is most important, and tends to ignore what other ages have achieved. It is the business of the humanities to conserve and to transmit the achievements of the human spirit and to discover their applications to the life of today. General education in the humanities should aim to give each student a substantial introduction to each of the major disciplines included in the liberal tradition. It is not enough that the student be introduced to literature *or* history *or* philosophy *or* the fine arts. In each field he should get his bearings, learn the basic vocabulary, become acquainted with the central concepts and with illustrations or cases, and should be on the way to life-long interest and self-education in each field. Just as the scientific temper disciplines and informs any study in the humanities, so history, language and philosophy discipline and inform science. For instance, science cannot be at its best without the critical study of language. We think largely with the use of words, which are symbols for ideas. Unless we learn to use and to organize words clearly and effectively our thinking will lack precision and accuracy. Effective use of language is a powerful help to good scientific thinking, and especially to communication in science, as well as a necessity in the humanities.

12. *General Education in Secondary Schools.*—General education at the secondary stage should include an acquaintance with one's physical environment ; an introduction to the basic ideas of science, physical and biological ; the precise and effective use of language as a means of communication, an appreciation of the higher values of life as enshrined in literature ; and an understanding of the processes involved in working and living together. These should be presented

with great simplicity in the early years and with gradually increasing range and thoroughness as the year pass.

Students in classes nine and ten can be easily made familiar with the outstanding elements of their physical environment, with the stars above, the rocks around, the significance of geographical forms and location, the meaning of the inevitable experience of weather, climate and air conditions. They can be made aware of the general behaviour of matter and energy. They can be introduced to the plant and animal life that surrounds them and made conscious of the ways in which a man's physical life and health may be made to sustain his life purposes. The same applies to a purposeful teaching of language and literature, mathematics, the elements of social sciences and the fine arts. The amount of language required will vary at different stages of education and in different parts of India. During grades one to five the pupils will learn only the mother tongue; in grades six to eight emphasis should be on the mother tongue and the federal language; from grades nine to twelve the study of English will be added to these. Students whose mother tongue happens to be the federal language will be required to study another classical or modern Indian language.

By the time a student has completed secondary school (high school or intermediate college), if he is intelligent and has been well taught he may have such an introduction to several of the fields mentioned that he can read and observe understandingly in each field, and can continue his self-education without further formal teaching.

We are strongly of the opinion that the content of general education, as indicated above, should be incorporated in the secondary school and college courses. We do not propose, in this place, to review each stage of education and suggest how this content of general education could be related to it. Taking our present arrangement, we suggest for the consideration of the authorities concerned the following modified scheme of courses, which without departing too radically from our practice may help to make that practice more consistent with itself and less open to serious educational objection than it is now.

The course of study in the ninth and tenth grades may include:

1. Mother Tongue (Correct and effective use of language, acquaintance and appreciation of select literature).
2. Federal Language (Comprehension and use in simple everyday situations) or

A Classical or Modern Indian Language (for those whose **mother tongue is the federal language).**

3. English (Comprehension and simple composition).
4. Elementary Mathematics.
5. General Science (Physical and Biological).
6. Social Studies (including a brief outline of world history with special emphasis on the history and geography of India).

7, 8. Not less than two of the following subjects :—
- (*a*) A classical language.
- (*b*) A modern language.
- (*c*) Additional Mathematics.
- (*d*) Physics.
- (*e*) Chemistry.
- (*f*) Biology.
- (*g*) Additional History.
- (*h*) Music.
- (*i*) Painting.
- (*j*) Craft-work.
- (*k*) Domestic Science.
- (*l*) Book-keeping and Accounts.
- (*m*) Typewriting and Commercial Practice.
- (*n*) Agricultural Science.
- (*o*) General Engineering Science.

The course of study in the eleventh and twelfth grades will include the following :

1. Mother Tongue.
2. Federal Language.

or

A Classical or Modern Indian Language (for those whose mother tongue happens to be the federal language).

3. English.
4. General Science (Physical and Biological)

or

Social Studies (including elements of Economics and Civics)

5—7. Not less than two of the following subjects :
- (*a*) History (Indian, European, World).
- (*b*) Geography (and Geology).
- (*c*) Economics.
- (*d*) Civics.

(*e*) A Classical Language (Sanskrit, Persian, Arabic, Latin, Greek).

(*f*) A Modern Indian Language (Hindi, Urdu, Bengali, Marathi, Gujarati, Tamil, Telugu, etc.).

(*g*) A Modern European Language (English, French, German, etc.)

(*h*) Logic.

(*i*) Psychology.

(*j*) Music.

(*k*) Drawing.

(*l*) Home Science.

(*m*) Physiology and Hygiene.

(*n*) Mathematics.

(*o*) Physics.

(*p*) Chemistry.

(*q*) Biology.

(*r*) Elements of Accountancy and Book-keeping.

(*s*) Elements of Banking.

(*t*) Business Methods.

(*u*) Economic History and Economic Geography.

(*v*) Steno-Typing.

(*w*) Industrial Organization.

(*x*) Commercial Arithmetic.

(*y*) Elements of Soil Science.

13. *General Education in Colleges.*—General education should continue into the more mature years of the student's life. It should aim at making him familiar with his physical and social environments, and with human institutions, aspirations and ideals.

He should have an understanding of the phenomena of nature around him, both animate and inanimate, and should acquire habits of precision in their observation and measurement : should know of the evolution of fundamental scientific concepts, of cross-fertilization of one science by another, and of the social significance of scientific advance and its bearing on his own personal health, mental and physical.

He should have an understanding of his social heritage and of the problems of organised society, and should develop intelligent social attitudes for effective participation in community life. He should be aware of the moral, intellectual and aesthetic values expressed in literature, art, religion and philosophy.

One of the fundamental defects of our education is the failure to recognise that fine arts like music and painting, drama and sculpture are authentic statements of experience. In the graphic and plastic arts man has recorded his deepest insights about life through colour, form and sound. They heighten and diffuse aesthetic sensibility and good taste and make us sensitive to beauty in all its forms. The study of the arts in general education should aim chiefly at the appreciation of arts as forms of human expression, at the awakening of students' sensibility to beauty, and his desire to create beauty in his everyday surroundings.

These objectives can be achieved by giving courses in mathematics, scientific method, physical science, biology, and psychology; in social studies (economics, politics, history, administration) and in the humanities (literature, philosophy and art).

The universities will have to devise ways and means for giving these general courses to their under-graduate students and naturally work out the scheme in their own distinctive manner. They will, perhaps, have a different number of such courses in various places, and the time devoted to them may also differ. We think it should be possible to organize, say, ten to twelve 3-month general education courses of 20—25 hours to cover this ground.

We suggest a similar course during each of the three college years to deal with religious values. During the first year such a course might well treat of the lives of great religious leaders of all faiths; the second year may be used for presenting the most universal elements of the great religious scriptures; and the third year class may be engaged in a study of the problems of philosophy of religion.

Of the general education courses the student may select just those which cover the ground not effectively covered by his special subject, and leave the rest. A student of physics may, for instance, drop the general courses in mathematics, scientific method and physical science, as he will have more detailed courses in the same fields. A student of economics or history may leave out some of the general courses in social studies. A student specializing in philosophy may waive the general courses in philosophy and psychology. On an average each student will have to take about nine of these general courses which works out to one course per term for the three years of undergraduate education.

14. *First Degree Course*: *Arts and Science.*—This will be of three years' duration. In addition to these courses on general education and religion, Arts and Science students, whether for the Pass or the Honours courses, will have to study—

(1) The Federal Language, or if that happens to be the mother tongue, a Classical or a Modern Indian Language;

(2) English.

(3) and (4). For Arts students, not less than two special subjects, preferably one from each group :

Humanities

(1) A Classical or a Modern Indian Language.
(2) English, French or German.
(3) Philosophy
(4) History.
(5) Mathematics.
(6) Fine Arts.

Social Studies.

(7) Politics.
(8) Economics.
(9) Sociology.
(10) Psychology.
(11) Anthropology.
(12) Geography.
(13) Home Economics.

(3) and (4). For Science students, not less than two special subjects from the following list :

(1) Mathematics.
(2) Physics.
(3) Chemistry.
(4) Botany.
(5) Zoology.
(6) Geology.

The course in the Federal Language or the alternative and English may end either at the end of the first, second or third year, as the case may be, according to the degree of proficiency of the candidate. Candidates for the first degree course would have had 6 years of tuition in the Federal language or its alternative and four years of tuition in English in the Secondary Schools. Among the optional subjects there will be provision for the intensive study of a Classical Indian or Modern language, federal or regional, as well as for the study of a European language, English, French or German.

It is unfortunate that we have not realised sufficiently the importance of the study of classics in our languages. A recent writer has said : "The difference between an educated man and an uneducated man is that the uneducated man lives only for the moment, reading his newspaper and watching the latest moving picture, while the educated man lives in a far wider present, that vital eternity in which the psalms of David and the plays of Shakespeare, the epistles of Paul and dialogues of Plato, speak with the same charm and power that made them immortal the instant they were written."[1] Ptolemy may be superseded by Copernicus, but not

[1] Gilbert Highet : *The Classical Tradition* (1949).

Sophocles by Shakespeare, nor Kalidasa by Goethe. Their works represent a complete and absolute vision. Literary geniuses do not correct one another as scientists do but give us alternative insights from new perspectives. Major Indian languages have had their classical writers and their study should be encouraged.

The Sanskrit language contains works which are priceless possessions of humanity and it will always have a place in a scheme of humanistic culture. In 1786, Sir William Jones, as the President of the Asiatic Society of Bengal, made the following pronouncement: "The Sanskrit language, whatever be its antiquity, is of a wonderful structure, more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs, and in the forms of grammar, than could possibly have been produced by accident, so strong indeed that no philologer could examine them all without believing them to have sprung from some common source, which perhaps no longer exists." There has been a steady deterioration in the study of the Sanskrit language. Dr. Belvalkar, the Director for Research, Bhandarkar Oriental Research Institute, argues that "next to one's own mother tongue which every one inevitably learns by Nature's method, the first language, the study of which ought to be academically pursued, is and ought to be Sanskrit, the language of India's culture and traditions." We do hope that our students will be encouraged to take up Sanskrit in their degree course.

Every course in Philosophy should include India's contribution to the subject. The history of Indian philosophy, if we bring to it the intellectual discipline it deserves, will disclose that Aristotle's Metaphysics is not the beginning of human wisdom nor logical positivism its necessary end. It is unfortunate that the number of students taking up philosophy is diminishing. A degree in Philosophy is believed to lead nowhere, not even to the badly paid post of a school teacher. We have made the subject unpopular by making the syllabus dull and heavy. There are many thinkers in Great Britain who advocate a compulsory study of philosophy even in the High School (VI Form).

The position of History in our Universities is also unsatisfactory. There is a marked bias in favour of Economics. Our methods of teaching and examining do not stimulate the historical imagination or develop a true sense of the past. We must train our young men and women to understand the historical causes of our world politics, to assess the value of historical evidence. A detailed study of the History of India is essential, but we require also a knowledge of

the history of other countries. One of our witnesses said: "A good School of History is of great importance in the intellectual life of a people not only because it alone can give the accurate knowledge necessary for a right understanding of modern problems both in one's own country and outside it, but also because history offers, to a greater degree than any other subject, an opportunity for the study of human personality in relation to circumstance, and fosters a sense of human responsibility; it helps to develop the moral judgment and to train the mind in the perception of values; whilst at the same time it develops powers of accuracy and of the proper weighing of evidence." In the study of Indian History more attention should be paid to Archaeology, because it is not only intrinsically interesting but provides an opportunity for visual education and practical work which would to some extent relieve the dependence on text books and lecture notes. For the Honours students, at any rate, a knowledge of historical world-geography as well as of philosophy of history may be required.

Mathematics is a subject which may be taken either by Arts or by Science students. India's contributions to Mathematics have been considerable. "The Hindus are the originators of the number system we now use. One particular tendency among them led to what has been generally referred to as the greatest invention in Mathematics. That was their custom of assigning a *sequence*, or *place, value* to each symbol used in number writing. Thus, if they were to express a number such as 2,532,745, they might write: 2 *prayutas*, 5 *laksas*, 3 *ayutas*, 2 *sahasra*, 7 *sata*, 4 *dasa* 5. Among the inscriptions of Asoka are found the so-called Brahmi or Asoka characters, from which our modern numerals were derived." Again, "the introduction of *O* with place value into the number system is a gift of the Hindus and one of the greatest gifts to mankind of all time. The approximate date of its entry is 500 A.D." "About 625 A.D., the brilliant Brahmagupta of Ujjain, India, gave directions for obtaining a *positive* root of the quadratic equation. Translated into modern symbols, his directions correspond very closely to the modern formula. Rightfully therefore we call it to this day the *Hindu Formula*".[1] India's genius for Mathematics again came to the notice of the world by the brilliant work of Ramanujan. Some Indian students have a natural taste for numbers.

In the study of the Positive Sciences, it will stimulate the interest of the pupils if we give them an idea of this country's contributions to their development.

We have put Fine Arts under Humanities, as aesthetic emotions provide us with vivid apprehensions of value.

[1] F. W. Kokomoor: Mathematics in Human Affairs (1942), pp. 37, 117, 220.

Sociology has not yet attained official recognition in many Indian Universities. It is generally regarded as a name for all the odds and ends which are not covered by other social studies as Economics, Politics, Social Psychology and Social Anthropology. Professor G.D.H. Cole defines Sociology as " a *general* study of social organisation, designed to lay bare and to analyse the interrelations of the various ways in which men become organised in social groups of every sort and kind, from the family to the most embracing social groups that possess the beginnings of an organised existence. It differs from Social Psychology in that its emphasis is on *organisation*, on external facts, rather than on what mental concomitants underlie organisation. It differs from Politics, in that it is concerned with the broad facts of social organisation, rather than with men's theories about them, or with the specifically political aspects of them. It differs from Economics, in that it is concerned with the foundations of social existence, which the economist usually takes for granted. In method, it is a fact-collecting, fact-analysing study, arriving at generalisations by the analysis and comparison of social facts, some of which it can take ready-made from other Social Studies, but many of which it must collect and digest for itself. It can learn much from the methods which Cultural Anthropology has applied chiefly to the study of the simpler societies of men : its business is at least equally, and in practice more, with the more complex modern societies".[1]

Anthropology has both cultural and scientific aspects. The anthropologist in our country has an important function to fulfil, because of the great diversity of social and cultural institutions and the necessity of understanding how they operate before we attempt to change them.

We have put Geography as a Social Study for it governs men's material as well as his spiritual existence and development. A study of such environment and conditions belongs to social sciences.

We have dealt at length with the subject of Home Economics in the Chapter on *Women's Education*. Our teaching in this subject should reflect the needs and interests of the communities into which those trained in this subject would go. They should also be acquainted with the economic, social and educational resources of these communities.

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[1] *Universities Quarterly* Vol. II, No 3, p. 267.

15. *The Duration of University Studies.*—The introduction of these courses in general education will naturally entail additional work. This will be made feasible by the longer duration of the university course which we have recommended (three years after twelve years of schooling). Even this longer course, it may be pointed out, however, will give to our university graduate a period of study shorter by one year than the graduate of a university in the United Kingdom or the United States.

Some teaching universities in our country accept students after they have passed the Intermediate Examination, *i.e.*, after twelve years of schooling. The older affiliating and some teaching universities admit students to the university after the Matriculation or the School Leaving Certificate, which is obtained after ten years of schooling. In these universities the Intermediate course is treated as a college or a university course. We propose that the student be admitted to the universities—colleges for Arts and Sciences as well as Professional Colleges for Medicine, Engineering and Technology—after twelve years of schooling, *i.e.*, after they have passed the qualifying test which will correspond to the present Intermediate standard.

The course for the Bachelor's degree in Science and Arts, whether for Pass or Honours, is recommended to be of three years duration; hence a regular student would take his Bachelor's degree after fifteen years of school and college course. The Master's degree will be taken in the case of the Honours candidate one year, and in the case of the Pass candidate two years, after he takes his Bachelor's degree.

Three years for the Bachelor's degree, for Pass as well as for Honours, was recommended by the Calcutta University Commission in 1917 for the Calcutta University, but this was not put into effect.

In the following table we show the number of years of schooling taken by a student before he reaches a level marked by a specific examination or degree. The schooling begins in most countries at 5 or at 6.

NUMBERS OF YEARS OF SCHOOLING

(Comparison with England and America)

Normal Time Period for a Regular Student for Taking Qualifying and Degree Examinations.

Exam Country	Matric	Inter or the Correspond-ing stage	Bachelor	Master	Doctor
India (Present) ..	10	12	14	16	18
India (Proposed) ..	10	12	15	16 for Honours 17 for Pass.	18
England	..	13	16	17	18
U.S.A.	12	14	16	17	19

In England, Matriculation is taken after eleven years of schooling, but there is a test after six and a half years of schooling (when a boy is between his 11th and 12th year), the objective of which is to see whether the boys have intelligence enough to proceed through the regular courses to the university stage. If they are not found suitable for university courses, their aptitudes for other courses are estimated and they are diverted to Technical or Vocational Schools or Modern Schools for training for other occupations. For the boys who are allowed to proceed through the regular course, the Matriculation is not the qualifying test for entrance to universities except in the case of London. In most of the other British universities, it is the stage corresponding to the Intermediate (taken after 13 years of schooling) which is the entrance qualification to the university. The British student takes a minimum of three years to take his Bachelor's degree, Arts or Science, so that one becomes a B.A. or B.Sc. after sixteen years of schooling. This shows that the Indian B.A. or B.Sc. has two years less of schooling than the English B.A. or B.Sc. Under the proposed scheme, he will have fifteen years of school and college training against the sixteen years of the British Universities.

The Master's Degree (M.A., M.Sc., or M. Litt.) can be taken in the U.K. one year after the Bachelor's degree on the presentation of a thesis or on examination, confined to one particular subject, or the student can proceed straight to the Ph.D. or D. Phil, but the minimum period for this is three years after B.A. or B.Sc. Hons. In special cases, this may be reduced to two years.

In the United States several variations in the division of school periods are in vogue, of which the most common, called the 8-4-4-plan, is shown in the above table. The student has to do eight years of schooling in the elementary schools and four years in the secondary schools before admission to the undergraduate courses in the colleges and universities for the Bachelor's degree in Arts or Science. Generally the course here extends over four years, so that the student takes sixteen years to reach the B.A. or B.Sc. degree. Entrance to professional courses commonly requires two to four years of college work ; that is, the completion of fourteen to sixteen years of schooling. Professional degrees require three to five years after entrance, or seventeen to twenty years of total schooling, depending on the profession and the standards of the university.

A distinctive feature of American universities is the Graduate School, which was introduced first in 1876 in the Johns Hopkins University, Baltimore, under the inspiration of the German University system. The provision for Graduate Schools marks off Universities from Colleges. The student has to work with one particular subject very intensively for a year, and he has then to qualify for the M.A. or the M.Sc. degree. The Examination is partly by written papers and partly by research work. The Ph. D. degree, which is the climax of the academic course, is taken two years after the Master's degree on the presentation of a thesis containing the candidate's independent research work on an approved subject either under a distinguished Professor or independently. Sometimes the thesis has to be supplemented by oral and written examinations. There are also Graduate Schools in Professional subjects like Medicine, Engineering, Forestry, Business Management, Social Sciences, and so forth, organized in a similar way as for the Science degrees.

The comparison shows that the Graduate School in America corresponds to what is known in India as the Post-Graduate School, but the Indian student proceeds to the Post-Graduate studies two years earlier than does the American student. Even if we extend the Bachelor's course to three years, he will proceed to Post -Graduate studies with one year less of schooling than the American student.

III.—Introduction of the Courses in General Education.

16. *Reading Material and Syllabuses for General Education Courses.*—The introduction of the principle of general education cannot be fully successful without material change in the contents of the courses offered. Ortegay Gasset has very wisely remarked that, " Scarcity of the capacity to learn is the cardinal principle of education ". There is an unlimited amount of knowledge which would be useful. The hours and the energies of even the most

ambitious and intelligent student are extremely limited. It is the obligation of the university to insure that the subject-matter to be presented in its classes is so wisely appraised and so rigorously selected that what is included is never less important than what is left out, and that no more is included than can be mastered by the student in a fair and reasonable share of his time and strength.

In case a student is specializing in some field, then very detailed courses may perhaps be justified. However, where a student is to have but a single course in a wide field, it becomes imperative that wise and exacting selection of subject-matter shall be made. The most fundamental and important concepts in the field must be presented, with a selection of illustrations and cases which will best clarify those principles. This means that to get the best results, courses must be designed specifically for theuse of classes in general education. This can be done, and has been done well in several broad fields. A considerable amount of excellent reading material for general education is available in other countries. No less important than the reading material is the mind of the teacher. If he simply repeats his old course in the old way in a class in general education, the results will be mediocre.

17. *The Introduction of General Education.*—The introduction of a general education programme needs to be carefully planned. In the numerous institutions in other countries in which such programmes have been adopted, it has been customary for the university to set up a committee on the subject, and for one to three years to be spent in preparing for a transition from the old to the new.

The entire curriculum is carefully examined and revised to provide for the introduction of the general education programme. A group of teachers, who will handle the programme in the several fields, meets at intervals, discussing teaching methods and content of courses. Curricula are worked out and reading material and reference books are selected. Sometimes trial courses are given for a year or more to students who volunteer to take them.

When preparations have been made, it is common to begin the required courses in the first year of the university, with optional courses in the later years if teachers are ready to give them. As the first year students of the general education programme move up through the second and third years the general education programme goes with them, so that in three years (in America in four years of the undergraduate course) the programme is in full operation. There are many variations in this programme in different universities. In some cases the entire programme is undertaken at once.

This description applies to the college years. Introduction of the general education programme in years nine to twelve is a much simpler matter.

Several colleges and universities which have introduced general education courses during the past thirty years have published descriptions of their methods. These descriptions would be available to any university undertaking such a programme. A brief bibliography of the subject is given in Appendix D.

IV.—Recommendations.

18. We recommend : (1) that students be admitted to colleges and universities in the faculties of arts and sciences, and to such professional schools as do not require more advanced preparation, after successful completion of twelve years of schooling or its equivalent ; that is, after they have passed the qualifying test which will correspond to the present intermediate standard ;

(2) that the Master's degree be given to honours students after one year of study beyond the bachelor's degree, and to pass students after two years beyond the bachelor's degree ;

(3) that both universities and secondary schools begin study of the theory and practice of general education, and undertake preparation of syllabuses and reading matter somewhat after the manner outlined in this section ; that studies be made by individuals and by educational groups in various fields ; and that literature for general education courses be developed which will give the student the best possible acquaintance with and mastery of the contents and methods of thinking and working in each field, and with the relations of related fields—this without requiring more than a fair share of the students' time ;

(4) that without unnecessary delay the principles and practice of general education be introduced, so as to correct the extreme specialization which now is common in our intermediate and degree programmes ;

(5) that the relations of general and special education be worked out for each field, keeping in mind the general interests of the student as a personality and a citizen, and his special occupational interest.

CHAPTER VI

Post-Graduate Training and Research : Arts and Sciences

I.—Introduction

1. Importance of Post-Graduate Training and Research. 2. Tradition of Scholarship in India.

II.—Post-Graduate Training

3. Training of Students for the M.A. and M.Sc. Degrees. 4. Present Position of the M.A. and M.Sc. Degrees. 5. Weakness of the Present System. 6. Recommendations.

III.—Research

7. Position of Research at the Universities up to 1945. 8. Foundation of Learned Societies. 9. Appraisal of the Present Position of University Research. 10. The Ph. D. Degree : (*a*) Arrangements for Training, (*b*) Selection of Students, (*c*) Selection of Subject, (*d*) Supervision and Facilities, (*e*) Requirements for the Award of the Degree, (*f*) Publication. 11. Research Fellowships. 12. The D.Litt. and D.Sc. Degrees. 13. Research by College and University Teachers.

IV.—Humanistic Research

14. Value of Humanistic Research. 15. Scope of Humanistic Research and Suggestions : (*a*) Sanskrit, Prakrit, Pali, Islamic and Iranian Studies, (*b*) Philosophy and Religion, (*c*) History and Archæology, (*d*) Fine Arts, (*e*) Social Sciences.

V.—Scientific Research

16. Introduction. 17. Shortage of Scientific Man-Power. 18. Shortage of Teachers in Science. 19. "Primary" and "Secondary" Workers. 20. Recommendations of the Scientific Man-Power Committee and their Implementation. 21. Effects of Shortage of Teachers in Science. 22. Basic or Fundamental Research and Applied and Development Research. 23. Need for Increased Capital and Maintenance Grants for University Laboratories. 24. Expenditure of Maintenance Grants.

VI.—Marine Biological Stations

25. Present Position of Biological Teaching and Research. 26. Incomplete Teaching, Restricted Fields of Research and Economic Loss. 27. Marine Biological Stations in Other Countries. 28. Schemes for Marine Biological Stations in India. 29. Suggested Measures.

VII.—Border Line Sciences

30. Newer Fields of Research.

VIII.—31. Recommendations

I.—*Introduction.*

1. *Importance of Post-Graduate Training and Research.*—Human civilisation has derived great benefits from the efforts of specialists who have penetrated ever more deeply into the secrets of nature and the motives and processes of human behaviour, individual and social. To a constantly increasing extent modern life is the outcome of research. To quote Whitehead, "a progressive society depends on its inclusion of three groups: scholars, discoverers, inventors". While the scholars rediscover the past and set before us ideals of wisdom, beauty and goodness, discoverers find out new truths, and inventors apply them to present needs. The universities are the chief agencies for producing these types of men who will fuse progressive activities into an effective instrument. Universities are responsible as much for extending the boundaries of knowledge as for the training of citizens: in fact, the advancement of knowledge is a necessary condition of the continued vitality of their teaching, for unless a study is rooted in research, it will die. Although the argument for research must rest upon the broad basis of its value in the intellectual progress of mankind, in India research has become a practical necessity for the continued progressive growth of our national life—in a critical appraisal and conservation of the best in our ancient indigenous culture (arts, history, philosophy and literature) as well as in modernizing and improving our agriculture, industries and public health. In the Humanities, research concerns itself mainly with the past history of man—the history of his thought as well as of his experiences, the understanding of man as a whole and the integration of the past with the present; while in the Natural Sciences research takes the form of searching out the undiscovered properties of nature and their application to the material needs of mankind. Humanistic research increases our knowledge of human nature and enables us to form correct judgments. Faced as we are with difficult political and economic problems, on the correct solution of which the very existence of our nation depends, we need all the equipment we can get from a sober evaluation of the ideal and material motives which influence human action as well as from a full acquaintance with economic laws and their working. As regards Natural Sciences and Technology, even the man in the street appreciates the fruits of research when he makes use of an automobile, an aeroplane, the radio, the cinema, penicillin, and the refrigerator. The last War and the difficult post-war conditions have forced even our administrators to think of scientific research which can enable us to grow more food on land and harvest more of it from the sea, find substitutes for petrol and coal, produce better breeds of milch cattle, and conquer malaria, plague and other diseases.

Most of the materially useful applications of science are ultimately based on hard, patient and disinterested work by thousands of scientific workers in the laboratories whose aim is to advance the frontiers of knowledge, without regard to whether their discoveries can be put to use immediately or later or never at all. This fundamental research is primarily the concern of the universities and generally precedes its application to human needs. It should be the aim of the universities as our national institutions to undertake research in as many branches of knowledge as possible, and to produce an army of trained research workers, who, by their studies, will not only set high standards of intellectual life in scholarship and scientific research, but will also actively advance the moral and material progress of our country. Training in research is equally valuable for administrators and men of affairs. An administrator imbued with the spirit of research will tackle a problem more thoroughly and with greater directness than one who has had no training in research. Advancement of knowledge is a duty primarily of teachers and it is for them to inspire their students with a spirit of inquiry by their own contributions to knowledge.

2. *Tradition of Scholarship in India.*—A high standard of scholarship has been traditional in our country. Manu[1] said that all the people of the world would come to this country to learn from her intellectuals the lessons of moral behaviour. This intellectual leadership seems to have deserted us. In this world of change, the intellectual rank of nations, like their material prosperity, does not continue in the same state. A people which relaxes its efforts in any department, falls behind its neighbours in that department. How we fell behind the advanced nations of the world in the matter of learning and science, it is not necessary to inquire. We must make a sustained effort to raise ourselves up. Political liberation, among other things, is a means for intellectual liberation. A cultural renaissance is in progress to-day, and a keen interest in Natural Sciences has grown up in the last two or three generations. While a few individual teachers have been doing valuable work in different fields, and a few universities have organised provision for post-graduate study, a great majority have not developed systematically and adequately this essential side of academic work, either because the supply of qualified students is not sufficient to justify it, or because they feel that they are not adequately staffed and equipped for the purpose. Provision for advanced study must be recognised as an integral part of our academic system.

[1]etad desaprasūtasya sakāsād agrajanmanah, svam svam caritram sikseran prthivyām sarvamānavāh.

II.—Post-Graduate Training.

3. *Training of Students for the M.A. and M.Sc. Degrees.*—The term "post-graduate training" in our country is applied to the training of students for the M.A. and M.Sc. degrees. It includes advanced study of one special subject of an extensive and intensive kind, which can only be undertaken by really capable students under the guidance of first-class teachers who have kept themselves abreast of the knowledge of their subject and have engaged themselves successfully in research. Since so much of our undergraduate teaching is still of a propaedeutic nature, serious academic work for pass graduates will only be done for a considerable period at the M.A. or M.Sc. stage. At this stage a student must be trained in hard intellectual endeavour which must form an essential feature of any good higher education worth the name. The post-graduate classes are intended: (1) to train teachers for all levels of higher education, (2) to train experts for many services in the non-academic fields, such as Government, industry, commerce, agriculture and public welfare, and (3) to train research personnel.

4. *Present Position of the M.A. and M.Sc. Degrees.*—While a majority of our students leave the universities after taking their B.A. or B.Sc. pass degrees and take to a profession, quite a number proceed to take their M.A. and M.Sc. degrees in order to qualify themselves for teaching posts in intermediate and degree colleges and the universities, or to take up superior administrative appointments in commerce and industry, or to compete for all-India or provincial administrative services. A considerable number take up the M.A. course in one of the Arts subjects along with their studies in law. Generally a pass graduate has to spend two years of further study before he can get an M.A. or M.Sc. degree, while an honours graduate, who has already spent three years for his honours degree, qualifies for his M.A. or M. Sc. degree at most universities after only one year of study. Since most students are anxious to take their bachelor's degree in the shortest amount of time, the number of students taking an honours degree in three years is relatively small. Some universities (*e.g.* Calcutta) award an honours B.A. or B.Sc. degree on only two years of work which is not quite satisfactory. The three years' honours course has succeeded at some universities, specially at Madras and the Panjab, but at other places it has not attracted a large number of students and has not been so popular (*e.g.* Lucknow and Allahabad). The M.A. and M.Sc. courses show a good deal of variation from university to university. At some places (*e.g.* Lucknow, Allahabad, Banaras, etc.) these courses are well organized and a pass graduate has to attend regular lectures and seminars in Arts subjects and lectures and laboratory exercises in Science sujbects

for two years and has to pass one or two university examinations, before he gets his M.A. or M.Sc. degree. At other places (*e.g.* Bombay, except in social sciences) there is no organized teaching by way of lectures or laboratory work and the student is mostly left to fend for himself, with the result that he is neither well up in the fundamentals of his subject, nor does he get any proper training in methods of research. At one or two universities (*e.g.* Bombay and Travancore) we gathered that pass B.As. and B.Scs. were immediately given problems for research to work for their master's degree; but most of the teachers themselves acknowledged that this arrangement was very unsatisfactory, both from the point of view of the student whose knowledge of the fundamentals of his subject always remained weak and who had to spend one or two years in mastering the methods and techniques of research, and from the standpoint of research itself, as the student's research was generally of an inferior quality and was more often a working up of his teacher's ideas and methods. Even the one year M.A. or M.Sc. course for the honours graduate varies at different universities: at some places the examination for it is based entirely on a thesis, at others only on papers, while at others on papers and a thesis combined. The common experience of teachers and examiners is that M.A. and M.Sc. theses, produced in a few months, are generally incomplete or unsatisfactory and are seldom worthy of publication.

5. *Weakness of the Present System.*—We have already emphasized the need for raising the standards of our first degrees (Chapter IV) and have recommended that both pass and honours courses for the B. A. and B. Sc. degrees should extend over a period of three years. Just as we are anxious to raise the standards of our first degree courses, we are equally anxious that the standards of our M. A. and M. Sc. degrees should be raised. The bounds of knowledge are being extended at an impressive rate, but the time available for the student is limited. We believe that a student who has taken an honours degree is not yet fully equipped for taking up a research problem on his own, much less is a pass graduate. These graduates need to carry on their studies to a further stage by regular instruction and to learn the methods of research. In Honours courses we teach the students to learn facts and to think effectively about them. In the M.A. and M.Sc. courses we should train the students to take to careers of scholarship and research. At some institutions we were told that teachers were unwilling to prepare and deliver advanced lectures to the M. A. and M. Sc. classes and hence there was no organized teaching for these degrees. "Research" had actually been introduced to cover up the void created by the failure to provide for advanced teaching by regular lectures and laboratory work

6. *Recommendations.*—We, therefore, recommend that there should be a certain uniformity in the regulations for the M. A. and M. Sc. degrees in all the universities. A pass graduate should study for at least two years and an honours graduate for at least one year for these degrees. Teaching should be properly organized by means of regular lectures, seminars and library work for the Arts students, and by the same course along with laboratory work for the Science students ; it should include advanced training and the latest methods of research in the special subject of study so as to equip the student to be able to carry on independent investigations, but it should *not* include actual research. A candidate for the M. A. or M. Sc. degree should show a high degree of scholarship and achievement in his examination, which should be conducted by papers and a *viva voce* test, to be supplemented by a practical examination in science subjects.

Great care should be exercised in the admission of students to the M. A. and M. Sc. classes. The whole of the students' records from the high school to the B. A. and B. Sc. should be scrutinized before admitting them to this second degree course. There should be no manner of provincial restrictions in admissions, and the Government of India should make it a condition that no university shall receive a grant from them unless its admissions to these classes are made on merit alone and on an all-India basis. Emphasis should be placed on the capacity and quality of students and not on their number. These classes should be characterized by their small numbers and by the closest personal touch with the senior staff directing their studies. No one should teach these classes unless he has himself been a successful researcher in his subject.

III.—Research.

7. *Position of Research at the Universities up to 1945.*—As long as our universities were of an affiliating type, only a few individual scholars at isolated colleges conducted research on their own lines, sometimes with admirable results, and some of them deeply inspired their pupils—for example, Sir R. G. Bhandarkar at Poona, Sir Ganganatha Jha at Allahabad, Professor Kuppuswami Sastri at Madras, Sir J. C. Bose and Sir P. C. Ray at Calcutta, Colonel J. Stephenson and Professor S. R. Kashyap at Lahore. Most of the research work in Sciences and Medicine was done by the scientific services in the Government Research Institutions. But no organised attempt was made to train students in methods of research and to develop schools of research at any university. It was only in 1914 that Sir Asutosh Mookherjee founded the first post-graduate departments at the Calcutta university and placed post-graduate training and research there on a

proper footing. Promising scholars from all parts of India were appointed to professorial chairs and in a few years Calcutta had produced research work of a high quality, both in the humanities and in the sciences, and several of its professors won international recognition. After the first World War several new universities came into being : of these, the teaching universities started post-graduate training and research from their very beginning, while some of the affiliating universities, new as well as old, started post-graduate departments in certain fields of study. These new schools attracted a number of young and promising teachers who organized research and raised the level of post-graduate teaching at several university centres. The degrees of Ph.D., D. Litt., and D. Sc. were instituted and were awarded to students on successful completion of their researches. In a few departments of some universities, the teaching staff came to consist largely of men with research degrees. A number of professors fulfilled their promise of leadership in research and their work brought them international recognition, like the Nobel Prize, the Fellowship of the British Academy, the Fellowship of the Royal Society, or the higher Doctorate Degrees of Oxford and Cambridge. It may rightly be said that both in quality and quantity the level of scientific research was at its best in Indian universities between the years 1920—1945. While before 1920 scientific research was mainly a monopoly of the scientific services, after 1920 the leadership in fundamental research in most of the sciences passed over largely to the universities. All this research activity was due to the hard work and enthusiasm of a few university professors, who had to work with meagre grants, insufficient equipment and inadequate library facilities. There were practically no grants from the Central Government for fundamental research, although grants were given to a few university teachers by the Indian Council of Agricultural Research for agricultural research and by the Indian Research Fund Association for medical research. Considering the handicaps under which these research workers in the universities have laboured, their record cannot but be called creditable.

The situation with regard to scientific research in the universities and research institutions was very well summarized by Dr. S. S. Bhatnagar in his report to the Empire Scientific Conference held under the auspices of the Royal Society in 1946[1]:—

> " Those familiar with the facilities provided by the modern laboratories in America or Britain would find it hard to understand the *handicaps that beset the scientific worker in India at every step. Lack of equipment, lack of*

[1] The Royal Society Empire Scientific Conference, June-July 1946, Vol. I, Page 126, Universities and Research Institutions).

accommodation, long hours of routine work due to insufficient teaching staff and finally the eternal want of funds are some of the problems that handicap science teaching and scientific research in Indian universities. These circumstances should not be lost sight of when assessing the work done in India. *The Government of India have no machinery for making grants to universities and research bodies for scientific research.* Since its establishment the Council of Scientific and Industrial Research has been allocating grants for research on *Applied Science* and also, though in a much restricted manner, for fundamental work. *Whatever be the agency involved, the need exists for much larger research grants to universities and other research organisations.*"

8. *Foundation of Learned Societies.*—The oldest learned Society in India, founded in 1784, is the Royal Asiatic Society of Bengal ; in 1914 it sponsored the foundation of the Indian Science Congress which meets once a year, generally at a university centre, to discuss papers in all scientific subjects, and at the same time to enable scientific workers from all over the country to make personal contacts. Starting with humble beginnings, it has now become a very influential body with a membership of thousands of persons, drawn both from the universities and the scientific services. With the growth of scientific research, several scientific societies have also been formed. These societies, like the National Academy of Sciences, the Indian Academy of Sciences and the National Institute of Sciences provide facilities for the publication of scientific papers in their journals and have thus substantially encouraged the growth of research in the country. Similarly, there are several societies looking after special subjects of study, like the Mathematical, Chemical, Physical, Geological, Botanical and Zoological societies. Of all these, the National Institute of Sciences has been recognised by the Government of India as the premier scientific organisation in the country, to whom they refer all scientific matters for advice and guidance. This society offers 11 senior and junior fellowships as well as 4 Imperial Chemical fellowships for research at the universities and scientific institutes.

Research workers in the Humanities and Social Sciences also hold a number of conferences either annually or biennially. The Oriental Conference, with sections in almost every branch of oriental scholarship usually meets once in two years, while the Indian History Congress, the Political Science Conference, the Philosophical Congress, the Economic Conference and the Indian Historical Records

Commission meet annually. At the All-India Educational Conference, problems of education are discussed in various sections dealing with primary, secondary and university education, examinations, etc. The best papers read at these congresses or conferences are generally published either in journals of their respective associations or elsewhere. These meetings give a good opportunity, especially to the younger teachers of universities, to have contacts with representatives of institutions and view points other than those with which they are familiar at their own universities. To make these conferences more effective greater care should be taken in the selection of papers.

9. *Appraisal of the Present Position of University Research.*—Although post-graduate training and research in the universities have made substantial progress during the last twenty-five years, to any one acquainted with the universities, it is clear that the amount of research done either by teachers or by research students does not approach what it should be. A university may be having M.A., M.Sc. and research classes in a score of different subjects, but it would be lucky if even three or four of its departments had turned out a respectable amount of research of good quality. A few distinguished research workers in a large country like ours are not enough ; we should not only have a large number of them but should raise the general average quality and quantity of research at all the universities. The Scientific Man-Power Committee[1] has gathered that the number of Ph.D. and D.Sc. degrees in six Basic Sciences, awarded by all the universities of India, during the last ten years, comes to only 260, an average of only 26 per year, which is by no means a good record. In England, at Cambridge alone in 1935, more than 400 men were engaged in scientific research, and the Ph.D. Degree, originally instituted for overseas graduates, is now sought after almost equally by the Cambridge graduates[2].

Unfortunately there are signs of a steady decline in the quality and quantity of research at our universities. There are several causes, but the most important is that most of the leaders of research in different fields have either left the universities or are on the verge of retirement and the universities have not been able to find suitable successors to continue the research tradition initiated and fostered by these pioneers. Ever since the higher administrative services were thrown open to Indian graduates, the universities have

[1]Scientific Man-Power Committee Printed Report (Survey and Assessment), August 1948, Page 265, Statement VI.

[2]Out of 365 students registered for the Ph.D. degree, as many as 174 were Cambridge graduates and 191 were overseas students.

had to compete with the Government, which is the largest employer in India, for recruitment of their teaching staff. The universities could not attract the best men to their staff and during the last ten years a number of brilliant teachers have left the universities for government service, as they were offered better salaries and prospects there. Although the universities can never offer the same scales of salaries as the Government does, they must ensure that they attract brilliant and promising men to their staff, and retain them by offering decent salaries so that their creative faculties are not blunted in the most productive period of their lives by privation. Further, during the last War and since, most of the universities have not received adequate scientific apparatus and equipment ; and their grants for apparatus have in most cases remained stationary although the prices have multiplied three or four times.

10. *The Ph. D. Degree.* (*a*) *Arrangements for Training.*—The post-graduate schools are the apex of the university, responsible for standards of intellectual life, for scholarship and scientific research. While most of our universities have regulations for admitting their M.As and M. Scs to a Ph.D. degree on completion of a piece of research during a period of two or three years, not all of them have the necessary teaching staff or equipment for properly looking after and organizing research work. Since universities have to deal, to a large extent, with beginners in research who have to be helped and properly trained, it is necessary to have teachers whose main work would be to train research students. Teaching universities should develop research training in as many branches of knowledge as they can with competence, while the affiliating universities (*e.g.* Agra, Rajputana, etc.) which are purely examining bodies at present, should establish post-graduate and research departments in as many subjects as they can with a high quality of scholarship.

(*b*) *Selection of Students.*—Utmost care should be exercised in selecting students for the Ph. D. classes. The student should not only have attained a proper background in the fundamentals of his subject, but should have a certain innate originality of mind, apart from mere learning, that is essential for a research worker. If a student has shown no originality, no initiative, or no critical ability in his M.A. and M.Sc. classes, he is not likely to do so in future. Not all men, not all educated men, are called to the particular vocation of a life of scholarship and research. It is a specialised form of intellectual life for which carefully selected students should be given training in the methods and principles of research. They must not be mere compilers, chroniclers or technicians, but scholars and scientists who

possess breadth of vision, imagination and ability to assimilate and integrate facts and communicate their findings. As in the case of M.A. and M.Sc. classes, admissions to the Ph. D. courses in all universities should be made entirely on merit and on an all-India basis.

(c) *Selection of Subjects.*—The Ph. D. course is that of specialization in which the training and achievement should be such as to ensure that the student has successfully explored his special field of study and has appreciably advanced knowledge of that subject by his own research. He should not become a mere narrow specialist, but his grasp of the subject should be characterized by breadth as well as depth. He should not take up a vague subject: it should be definite enough to make him concentrate and significant enough to deepen and extend his general knowledge. His investigations should include wide reading, critical appraisal of material and reflection essential to intellectual progress. In Sciences, where the body of knowledge is increasing so rapidly, he must have learnt something of all branches of his subject, know how to look up relevant data, be interested in the achievements of leaders in other branches of science and be able to understand the significance of their discoveries.

(d) *Supervision and Facilities.*—The supervisor, who should be a specialist in the subject and a successful researcher, should meet his students about once a week during term for the discussion of difficult points and the criticism of rough drafts of parts of their theses. A certain number of studentships should be provided for those who are selected for the Ph. D. course and are in need of financial assistance.

The rules about residence may be relaxed and leave of absence may be given for the purpose of work at recognised institutions, like the Bhandarkar Oriental Research Institute, Poona, the Royal Asiatic Society of Bengal and Bombay, the Indian Institute of Science, Bangalore, the Zoological and Geological Surveys of India, etc., if the supervisor is satisfied that the student will profit by working at these institutions.

(e) *Requirements for the Award of the Degree.*—The training for the Ph. D. degree should extend over a period of at least two years. The candidate should show ability to study a problem systematically and to relate his results to the general body of the subject. He should present a thesis embodying his original contribution to knowledge set forth in such a manner as to be fit and ready for publication.

The thesis should be examined ordinarily by three examiners, two external and one internal. There should always be a *viva voce*

examination which should test his general knowledge of the whole field of the subject[1] to which his thesis refers.

(*f*) *Publication.*—Publication is the greatest stimulus to produce good work. The writer of a thesis is rewarded with a degree if his work is a definite contribution to knowledge, but a thesis which is not published does not increase knowledge. A student learns a good deal in producing his thesis, and the examiners learn something in the process of looking it over, but the world is none the wiser and learning is not advanced unless the thesis is published. The criticism of outside experts can only be obtained by its publication, which is necessary also to prevent the doctor's degree being made too easy at any particular place. On the whole, there is no difficulty in getting a scientific paper of merit being published in India or abroad, but we were told that the publication of theses in the humanities presents difficulties. We recommend that the university should assist in the publication of really good work by financial aid.

11. *Research Fellowships.*—Training for the Ph. D. degree is not the final step in the education of a competent scholar or scientist. In a very real sense, his education never ends—not only because it is impossible to " complete " one's training while at the university, but because the onward sweep of knowledge, specially in the sciences, constantly brings forward new material. Those who received a doctorate in science, say 10 years ago, are now well behind the present frontiers, unless they have kept up their studies.

We assume that many of those who take the Ph. D. degree will join the teaching staffs of universities. We must make it possible for some of them to dispense with or postpone the earning of their livelihood by non-academic employment. The university should be able, by its own resources and attractions, to excite and gratify their ambition of contributing to scholarship and science. We must place research workers in a position in which they will have ample leisure and opportunity for original work. They should not be burdened with teaching to an extent that it will deprive them of adequate leisure for their own work. Normally it is not an impediment to an original investigator to have to devote a small part of his time to teaching or superintending practical instruction ; in fact, it is an advantage.

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[1]For example, if a student takes up a research problem in spectroscopy and presents a thesis, he should have a good general knowledge of experimental spectroscopy as well as of those parts of molecular and atomic physics which explain the spectra. Similarly, a student presenting a thesis on an entomological problem should have a sound knowledge of all aspects of entomology as a whole and should be familiar with recent advances in the subject.

We recommend the establishment of Research Fellowships in the main branches of knowledge recognised in the university. They should be open only to advanced students of high scholarship and potential leadership and should be awarded to those who have shown a high degree of competence for research. These fellowships are not merely rewards for ability but opportunities for independent study and work and preparation for high academic positions. They should not be too many in number nor too great in value. Their grades, salary-rates and super-annuation pension should be equivalent to those of the teaching staff. The larger universities may have 20 to 30 of these fellowships distributed over different branches of study, and every year two or three may be selected after a searching competition. The work which they will undertake should be left to their free impulse. In a university they will be brought in touch with those who know what has been done and is being done elsewhere and what needs to be done. The university should provide both the atmosphere and the apparatus for higher study and direction by way of companionship and encouragement of older scholars and acquaintance with the movements of learning in the world of thought.

Research should be primarily, if possible, the sole work of the holders of these fellowships and not a mere adjunct to a life consumed in teaching. They would generally divide their time between their own investigations and the training of other research workers.

12. *The D. Litt. and D. Sc. Degrees.*—The D. Litt. and D. Sc. degrees should be conferred on persons whose work shows conspicuous originality, ability and distinction. They should be awarded entirely on published work of outstanding quality. The published work for these degrees should be adjudged by external examiners alone.

13. *Research by College and University Teachers.*—We have already emphasized that a university teacher, to be efficient, should hold up to himself a higher standard of attainment than mere possession of information which has to be communicated to the student. In a school a teacher may be excellent without possessing more knowledge than what he is actually required to communicate, but it is not so in higher education. In colleges and universities, it is not facts that we communicate but an influence. The mind of the learner can be acted on only when the mind of the teacher is active.

That research is as important a function of a university as teaching has not been adequately realized by teachers and university administrators in our country. Some of the university teachers who do not care to look after their intellectual health try to justify

their laziness by subscribing to the dictum that research is not an integral part of university's work—it is a mere luxury. One of the teacher-witnesses frankly confessed to us that the reason for inadequate amount of research by teachers in our universities was that we were a lethargic people, and one of the vice-chancellors also testified that the reason for stagnation amongst teachers was not so much lack of opportunities in the way of library and laboratory facilities as sheer unwillingness to put in hard work and learn more.

University teachers should not forget that theirs is a privileged life; they have leisure and a life of tranquillity—the two essentials for research; they are largely sheltered from the battle of life, having a security of tenure nowhere obtainable in a business house or an industrial concern or in political life. They should give the community, in grateful acknowledgement for these privileges, punctuality, efficiency and devotion to duty in relation to their teaching work, and the germs of new ideas and newer methods in relation to their research work. They should not only impart existing knowledge, but should be, in a real sense, creators of new knowledge.

IV.—Humanistic Research.

14. Value of Humanistic Research.—When the man in the street speaks of research, he generally thinks of research in natural sciences, but educated men cannot undervalue the mutual relations of the different departments of knowledge, the primary philosophical truths to which we cannot attach a materialistic value, and all that retrospective knowledge which in the largest sense is called History. If we develop a community with a large amount of material knowledge, power and energy, with more or less of an absence of widespread influences of humanities, it will be in a perilous condition in a crisis for lack of that enlarged knowledge, philosophical thinking, and refinement of sympathies and tastes which we owe to the humanities. Only by a combination of sciences and humanities can a true conception of civilisation survive.

15. Scope of Humanistic Research and Suggestions.—Humanistic research has a great advantage over scientific research in that it is comparatively inexpensive. It does not need extensive laboratories and a costly equipment of instruments, but it does need some equipment. Its main need is a first class library. Although our library resources are poor and universities are not generally well stocked in books and manuscripts, and are in need of generous grants, still there are ample resources in our country for

research in Languages and Literature, classical and modern, Philosophy, Religion, History and Fine Arts. Humanities have another advantage in that teachers and students of these subjects have comparatively greater leisure as compared with teachers and students of Sciences, who have to spend long hours in their laboratories.

(*a*) *Sanskrit, Prakrit, Pali, Islamic and Iranian Studies.*—Sanskrit language and literature, which constitute our cultural heritage, offer many opportunities for research. They contain works of philosophy and religion, grammar and prosody, medicine and astronomy, art and architecture, economics and politics. While many of the works of classical Sanskrit literature have been published, many have yet to be printed and published with due editorial care. The Baroda Oriental Institute Library contains nearly 14,000 valuable Sanskrit, Prakrit and Apabhramsa manuscripts, and similar large collections are present in the libraries of the Royal Asiatic Society of Bengal and of Bombay, Bhandarkar Oriental Institute, Deccan College Research Institute, Ganganatha Jha Research Institute, Kuppuswami Sastri Institute and several others.

Pali is only next in importance to Sanskrit and contains Budhist Canonical literature, and extensive Jain Canonical and Post-canonical works are found in Prākrit. Students of Pali and Prākrit have a vast field for research before them.

Aligarh university should be encouraged to develop a strong centre for Islamic studies.

Affinities of the Veda and Zend Avesta are well known and it is appropriate that Bombay and the new universities in Gujerat should pay special attention to Iranian and Zoroastrian Studies.

(*b*) *Philosophy and Religion.*—Our country has been the home of many religions and systems of philosophy which have met the moral and spiritual needs not only of highly educated and intellectual men but the practical needs of the common man in his daily life. Similarly, we have our systems of logic, ethics and psychology an extensive study of which will repay the best efforts of modern scholars. But our present fundamental cultural problem is to adapt our ancient tradition and culture to the exigencies of the new era of Western thought and culture. We have to modernize our national and historical individuality by mobilising our spiritual forces and building up a new civilization from our own history, which will be neither European nor American, but essentially Indian and human.

Religious problems are a challenge to our universities. It is their duty to discriminate between the elements that give strength, dignity and meaning to human life and those that are degrading to our dignity, to apply rational methods of criticism to narrow and

intolerant sectarianism and thus turn religious fanatics into scholars. By emphasizing the high summits of knowledge where the truths of all religions converge, they can dispel the shadows of the errors and follies of the past, and infuse into the minds and tempers of future generations Mahatma Gandhi's ideals of truth, tolerance and non-violence.

(c) *History and Archaeology.*—Our long history from the Indus Valley civilisation to the attainment of Independence, falls into a number of more or less well-defined periods. Besides, in a large country like ours, there is so much of regional history of several areas which still needs to be thoroughly explored. There is still so much to be learnt of our social, economic and political history throughout the centuries. Lectures should be organized for research students on Palaeography, Archaeology, Bibliography and other auxiliary subjects, together with practical instruction in the reading and use of manuscripts, and critical and constructive work.

Some universities should take up the study of Archaeology in co-operation with the Archaeological Survey of India. Some equipment in the way of casts, models, maps and occasional originals should form a small museum at almost every university.

(d) *Fine Arts.*—Most of our universities have not yet recognised music and painting as subjects of study for their degree courses. Training in these subjects is still given in its formal and technical aspects only at separate institutions, where most of the students have no academic background. But if one of these subjects (*e.g.* Music) is introduced in the university as part of a cultural course, it can acquire a value beyond a mere perfection in the practice of its technique (practical instruction in vocal and instrumental music), as it will include a study of its theory and its history. The course will, of course, include two other subjects, *e.g.* History and Economics. In this way a student will not regard music as a professional course, but as a part of his academic training.

Very little of advanced work has been attempted so far in music, but there is scope for it in collecting and editing rare works on music in gathering knowledge of Vedic music from Sama Veda, in the appreciation and interpretation of different schools of music and their relationships, and finally in a possible synthesis of Eastern and Western music, and of melody and harmony. The same objectives may be adopted in regard to painting also.

(e) *Social Sciences.*—Phenomenal advances in Science and Technology are shattering the stability of the old social order and there is an urgent need of adapting our social life to the needs of the

industrial order to avoid chaos and crises. In order to replace passion by reason and prejudice by understanding, we must study the nature of human society and its present dynamic phase in India. A social scientist has the whole community for his laboratory. Contact with actual life alone will reveal how business men and industrialists behave and how labour and their unions do. For a proper understanding of human beings and the effective management of human relations, we need to muster all our resources in psychology, sociology, political theory, government and administration. We need the services of competent men trained in institutes of economic and social research for diagnosing and treating our economic ailments.

We also need men of outstanding ability and force of character to work for us on the international field. They must be keen students of world history and world politics and it is up to our universities to undertake the important work of providing such men.

V.—*Scientific Research.*

16. *Introduction.*—In a progressive society science has become an indispensable condition of civilized existence and a main factor in determining the direction of progress. Our country needs a constant flow not only of trained scientific workers but also scientific leaders filled with the spirit of research. The day-to-day running of industries and public services requires a large number of scientists, but we need research workers of a high quality to advance science itself, to develop new processes and new machinery and, above all, to train our future generations of scientists. It is therefore urgently necessary that we should have widely extended facilities for scientific education in our schools, colleges and universities, and at the same time provide ample facilities for training in research. The answer to our national problem in science is not to be found in strengthening the scientific departments of only colleges and universities, but also those of schools. All the students and all the institutions are essential to the national programme for training scientists.

17. *Shortage of Scientific Man-Power.*—That we are very short of scientific personnel in our country has been brought home to us by the Scientific Man-Power Committee, who have estimated that our requirements of scientific man-power of the senior grade (for which M. Scs. and Ph. Ds. alone can be employed) for Government and, Government-sponsored activities alone (including Science teachers,

but not including the personnel required for Industry) *for the next* 5 *years* are as follows :[1]

	Senior Grade
1. Chemists & Chemical Technologists	3,884
2. Physicists	2,791
3. Geologists & Geophysicists	1,120
4. Mathematicians & Statisticians	1,560
5. Botanists	897
6. Zoologists	1,425
7. Biologists	663
	12,340

We have purposely not included the personnel required for industrial development, as this will depend on the prevailing economic and political conditions. If conditions are favourable, we shall probably need another 3500 M. Scs. and Ph. Ds. for industry.

As against these requirements, the present outturn from our universities is exceedingly small. The Committee have estimated that the possible out-turn of M. Scs. and Ph. Ds. *during the next* 5 *years*, if all the existing facilities are fully utilized, will be as follows [2] :—

	Possible Outturn during the next 5 years if existing facilities are fully utilized.
1. Chemists & Chemical Technologists	2,291
2. Physicists & Applied Physicists	1,017
3. Geologists	186
4. Mathematicians & Statisticians	605
5. Botanists	292
6. Zoologists	358
7. Biologists	50
	4,799

The Committee rightly conclude that if all the available training facilities at the universities are fully utilized, the annual out-turn will only be 30-35% of the total requirements of the country. There is thus a wide gap between the probable requirements and the anticipated output, and the committee rightly remark that the gap is both qualitative and quantitative. A great deficiency has therefore to be made up, and it can only be done if the existing facilities for post-graduate training and research at the universities are greatly extended and new departments of research are added to those universities where they do not exist at present.

[1]Report of the Scientific Man-Power Committee, August, 1948 (mimeographed document), page 29, Chapter II, Table IV, Statement of Requirements for Government and Government-sponsored Activities.

[2]Report of the Scientific Man-Power Committee, August, 1948 (mimeographed document), Page 63, Chapter IV, Table XII.

18. *Shortage of Teachers in Science.*—The Scientific Man-Power Committee[1] says, " of all the handicaps from which our educational institutions are at present suffering, *the shortage of teachers is perhaps the worst* ... *This is adversely affecting the standard of training in the institutions*... As technical and administrative jobs are very much better paid than those of teachers even in the first-grade institutions there is a steady ' drift ' of teachers going on from the universities and other educational institutions into scientific and technical jobs in industry and Government departments, whenever available, and when these are not available, into clerical and technical jobs. Educational institutions are finding it increasingly difficult to attract suitably qualified persons for teaching posts. Unless the situation is tackled immediately with a sense of urgency, there is no likelihood of any of our long-term development plans materializing. The problem is capable of solution only on an economic plane, since economic factors are at the root of it. " We consider that this is a correct appraisal of the situation, but we must emphasize that the shortage is much more *qualitative* than quantitative. First-class teachers and investigators are relatively rare—many are called but few are chosen. It is, therefore, desirable to provide facilities of training for large numbers in the hope that we may get a few men of outstanding calibre as they are the men who will count in the future. If our universities could produce any one of the calibre of a minor Galileo or a Helmholtz once in twenty-five years, they would have justified themselves.

19. " *Primary* " *and* " *Secondary* " *Workers.*—Original workers can be divided into two groups : (1) primary and (2) secondary. There are men like Galileo who cannot help doing original work, he went on investigating in the Dungeon of the Inquisition, but there are " secondary " workers who will work and do well if they are guided and stimulated. Obviously the Professors in our universities should be " primary " investigators radiating activity and inspiring others to work. The secret of the large output of original scientific work in Germany was that they made full use of secondary workers, and there were at least 20 secondary workers attached to a primary worker. We have in our country only a few primary workers and it is their duty to attach to themselves as many secondary workers as they can.

20. *Recommendations of the Scientific Man-Power Committee and their Implementation.*—The Committee make two essential recommendations : the first is to have a large number of

[1] Scientific Man-Power Committee Report (Mimeographed copy), August 1948. Chapter VII, Page 100.

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post-graduate and research scholarships and free places at the universities, and the second is to up-grade the salaries of teachers. They have suggested that the number of free places and scholarships should be as follows :[1]

	Free places.	Scholarships.	Annual expenditure in lacs of rupees.
1. Pure Science, Post-graduate courses (M.Sc.)	350	150	6·60
2. Research training, Pure & Applied Sciences (Ph.D. & D.Sc. etc.)	315	315	13·23

We welcome this suggestion and recommend that the Ministry of Education should set up a machinery as early as possible for selecting the best students from all over the country for these scholarships and free places. Selected students should be sent to those colleges and universities which provide the best facilities for training in their subjects of study. A beginning should be made at once. We consider that the value of a scholarship for an M. Sc. student should be Rs. 1,200 a year and that for a Ph. D. student Rs. 1,800 a year.

We must be able to pick out young men of exceptional scientific talent and provide them with opportunities for equipping themselves in the different fields for which they manifest aptitudes. In the U.S.A. they have a nation-wide organisation of science clubs which serves as the recruiting ground of scientists of exceptional ability. These clubs, which have about 20 or 30 members each, function in more than 14,000 Junior and Senior High Schools. The Science Service which administers these clubs conducts annually a *Science Talent Search* by which promising boys and girls are selected for further training. Those who are chosen after an examination of the school record, the results of aptitude tests and their essays on research projects, are sent to Washington where they meet leading American scientists and get acquainted with their latest researches. Apart from this, there are the State Talent Searchers and Science Scholarship programmes which cover over 4,800 High Schools in the country.

As regards the salaries of teachers, they recommend the following grades[2] :—

(a) *University Institutions, Professional Institutions and other Post-graduate Institutions* :—

Professors (Senior)	Rs. 1,500 to 2,000 per month
Professors (Junior)	Rs. 1,000 to 1,500 ,,
Readers, Assistant Professors and Senior Instructors	Rs. 750 to 1,200 ,,

[1] Scientific Man-Power Committee Report (Mimeographed copy), August 1948, Chapter VII, Page 100.

[2] Scientific Man-Power Committee Report (Mimeographed copy), August, 1948, Chapter VII, Page 102.

Senior Lecturers	Rs. 500 to 750 per month.
Junior Lecturers, Demonstrators etc.	Rs. 350 to 600 ,,

(b) *Science colleges, Undergraduate standard.*

Professors	Rs. 600 to 1,200. per month.
Assistant Professors	Rs. 350 to 850 ,,
Lecturers, Demonstrators, etc.	Rs. 250 to 500 ,,

Further, in their interim report[1] the Committee recommend the creation of 20 professorships, 20 readerships and 40 lecturerships at different universities. There is no doubt that we need an upgrading, both qualitative and quantitative, of students as well as of teachers. We have already discussed the question of teachers' salaries in a preceding chapter. As most colleges and universities are understaffed at present, we recommend the creation of additional posts of Professors, Readers and Lecturers, as soon as competent men are available to fill these posts with adequacy in quality.

21. *Effects of Shortage of Teachers in Science.*—Increasing our supply of scientific personnel is a task that will necessarily take time. A highly skilled and productive worker in research and development laboratories can be produced only by years of rigorous and intensive training. It takes a scientist to train other scientists, and our shortage of high-quality scientists is a real threat to the quality of future science workers in our colleges and universities. An M.Sc. in science is not necessarily a scientist. Numbers *without quality* will not make up the shortage, nor assure the nation's scientific progress. The Scientific Man-Power Committee estimate that if all the existing facilities are fully utilized, it is possible, in five years, to train 4,799 students in six basic sciences. But there is room for serious doubt whether these 4,799 students can be adequately trained to become capable scientists, unless we have high quality scientist-teachers. Our qualitative shortage of teachers will particularly affect the post-graduate and research training adversely, as increasing individual contact with skilled scientist-teachers is very essential for training in these courses.

We must, therefore, zealously conserve our resources of first-class scientist-teachers by offering them adequate salaries, relaxing retiring age limits, relieving them of routine administrative duties, giving them increased grants to extend their research facilities, etc. It is up to us to build our own foundation for future scientific progress at a time when we lack sufficient number of teacher-scientists for the adequate training of potential scientists in our colleges and universities.

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[1] Scientific Man-Power Committee, Interim Report, 1947, Page 27.

22. *Basic or Fundamental Research and Applied and Development Research.*—The division between basic and applied research is not a line but an overlapping area. Generally basic research is a quest for fundamental knowledge about the nature of man and the universe, and the principles governing its operation, while applied and development research directs these discoveries toward definite objectives. The discovery that an atom could be split was made by Hahn in Berlin following a series of investigations by the Italian physicist Fermi : it was pure or fundamental research in laboratories with no idea of its applications. Applied research in America made use of this discovery and created the atom bomb. With further development, it is hoped that the discovery of atomic fission may be used for generation of power and other uses for human welfare and security. Similarly, Mendel, by his experiments on peas and highly ingenious deductions therefrom, discovered the two great underlying principles of inheritance : the principle of gametic purity and that of the independent assortment of factors (genes) : it was fundamental research. The application and development of Mendel's laws have given us improved and rust-resistant varieties of wheat, varieties of poultry with a high rate of egg production, fine breeds of milch cattle, etc.

The interest of Government in scientific research is naturally utilitarian and as the organisation of science to aid agriculture, engineering, industry, medicine, etc. requires large laboratories and organized team work, the Government have plans, partly or largely implemented, for the establishment of several new Scientific Laboratories and Institutes.[1] Besides these, there are already well-established

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[1](*a*) The following *six* institutes have been recommended :—

1. Institute of Food Technology.
2. Building Research Institute.
3. Road Research Institute.
4. Leather Research Institute.
5. Electro-chemical Institute.
6. Drug Research Institute.

(*b*) The construction of the following *five* laboratories and institutes is under way :—

1. National Physical Laboratory, Delhi.
2. National Chemical Laboratory, Poona.
3. National Metallurgical Laboratory, Jamshedpur.
4. Fuel Research Institute, Dhanbad.
5. Central Glass & Ceramic Research Institute, Calcutta.

(*c*) Plans for setting up of the following *six* new laboratories are well under way :—

1. Leather Research Institute, Madras.
2. Electro-Chemical Industries Research Institute, Karaikudi.
3. Central Food Technological Research Institute, Mysore.
4. Central Drug Research Institute, Lucknow.
5. Road Research Institute, Delhi.
6. Building Research Station, Roorkee.

institutes like the Indian Agricultural Research Institute Indian Veterinary Research Institute, the Indian Forest Research Institute, and the Geological, Zoological and Anthropological Surveys. Scientific research at these numerous Government Laboratories, Institutes and Surveys will always be partly fundamental, although it will be largely applied, and they must constantly look to the universities for a continuous supply of scientific personnel highly trained in fundamental research for recruitment of their staff.

Fundamental research is more individual rather than organizational. The actual process of discovery is almost always an achievement of the individual mind requiring a man of superior ability and training. The greater part of all fundamental research comes from the universities—the teachers and research students. Unless university research departments are strengthened, the stream of basic discoveries that feeds applied science and technology will dry up, and further, we shall reduce the number and quality of new scientists whose skills must produce these discoveries.

Dr. S.S. Bhatnagar, presiding over the Annual meeting of the National Institute of Sciences at Allahabad on 4th January, 1949, rightly observed : " While National Laboratories and Research Institutes will play an ever increasing part in furthering the application of science to industry, it is clear that *ultimately we have to depend on the universities for an even and constant flow of scientific workers and leaders imbued with zeal and zest for research........ Universities have been rightly recognised as the fountain heads of knowledge and it is in their free atmosphere that we should look forward to vigorous pursuit of fundamental research.* Fundamental research is the source from which extraordinary applications are likely to emerge and unless we keep ourselves in the forefront of fundamental work, it is unlikely that we would make much original contribution to applied research ". The case for fundamental scientific research at the universities could not be expressed more forcefully.

On the whole, whatever scientific research there has been in our universities has been largely of the basic or fundamental type. This is as it should be, and must continue with the help of generous grants of money and material by the State. While in a university there must be perfect freedom in the choice of subjects for research, pure or applied, there is no reason why our universities should not also take up problems of applied and development research in agriculture and industry. In fact, with the growth of democracy our legislators and the general public may legitimately ask of the universities as to what they have done for the common man. For example, Nagpur is the centre for the orange crop, and what could

be more natural for the Nagpur university than to find out all about the soil conditions, physical and chemical, for the healthy growth of this crop, to study all about the insect-pests that infest the orange tree and the most economical means of eradicating these pests, to try and evolve better types of oranges, seedless oranges if possible, to work out ways and means of how best to pack and transport properly oranges all over the country, by delaying over-ripening or by preservation, and thus to utilize the crop to its maximum extent? Similarly, the Lucknow university could look after the mango and papaya industry, and Allahabad the guava industry. It is not enough that results of the findings of research workers should be published in scientific journals : they must carry their results to the doors of the farmer. The universities should, in fact, establish a number of field stations in the surrounding countryside where their research workers can demonstrate to the farmers the results of their findings in the laboratories and thus help them to raise better crops, fncrease their income and raise their standard of living.

It has been the genius of the Americans in their famous Land Grant Colleges and Universities to take fundamental discoveries from Europe and develop them tremendously and swiftly for human needs, thus outstripping Europe both in agricultural and industrial technology. Let our universities emulate their counterparts in U.S.A. and develop not only fundamental research which will be their primary concern, but not neglect applied research which will bring them the good will of the community.

23. *Need for Increased Capital and Maintenance Grants for University Laboratories.*—The Scientific Man-Power Committee estimates[1] that in order to implement their development plans for higher scientific education and research (excluding medical, agricultural, engineering and technological), the Central Government should provide an additional capital grant of 494·735 lakhs and a maintenance grant of 60·0806 lakhs per annum, over and above what has already been provided by the central and provincial governments. The capital grant is chiefly for new buildings and their equipment, while the maintenance grant is for laboratory apparatus, chemicals, etc. To the layman unacquainted with university finance and the cost of higher scientific education and research these demands may seem considerable, but that they are very reasonable will be seen by a comparison with what the United Kingdom is doing for her higher scientific training. The Council of the Royal Society in September,

1 Scientific Man-Power Committee Report (Mimeographed Document), Annexure V, Summary of Financial Implications of Development Plans), pages 1, 4, & 5.

1946, recommended to their Government that the average pre-war maintenance (recurring) grants for fundamental sciences which stood at 3·66 lakhs pounds (£ 366,000) a year should be increased to 10 lakhs pounds (£ 1,000,000) a year as follows[1] :—

———	Average pre-war 1939	Estimate for normal post-war year.
	£	£
Physics	103,000	300,000
Chemistry	150,000	400,000
Geology	27,000	75,000
Biology & Biochemistry	86,000	225,000
Total ..	366,000	1,000,000

On inquiries made from the office of the Royal Society, we have been officially informed by the Assistant Secretary that in 1947 " the Secretaries of the Royal Society made a review of the implementation of the above recommendations and assured themselves that satisfactory action had been taken in almost every instance with the active co-operation of the University Grants Committee ". The British Government, realizing the value of fundamental research at the universities, trebled their pre-war recurring grants in 1946-47 and now spend about 135 lakhs of rupees per annum on five fundamental sciences alone in the universities, besides giving them capital grants for buildings, equipment etc. In 1947, they increased the grants by about 85 lakhs of rupees. We have no doubt that the Government of India are anxious that India should take her rightful place in the vanguard of the comity of nations in all fields and in the field of sciences in particular. We should, therefore, urge them to give both moral and material support to the scientific departments of the universities.

24. *Expenditure of Maintenance Grants*.—Generally each department of science of a university (*e.g.*, Physics, Chemistry, Zoology,

[1] Royal Society Empire Scientific Conference, Report, Vol. 11, page 441.

Botany, etc.) should have a fixed annual grant allocated to it and the head of the department should be trusted to spend this sum carefully and economically within the year. At several places we heard complaints of over-centralization and consequent delays in the expenditure of grants for purchase of apparatus, etc. At one place we were informed that the Principal of a college could not spend more than Rs. 50/- without proper sanction from the higher authorities. This is probably an extreme case, but there is no doubt that, for expeditious working, we need far more of decentralization and cutting down of red-tape. The system should be based *not* on distrust, but on trust. Principals and Heads of departments should be trusted to spend their grants properly—they should place orders with firms directly, and on receipt of goods, certify that the goods have been received in good order and in right quantity and that payment should be made by the central office. They need not handle large sums of money, but should have a contingent grant, say of Rs. 200/- for day to day expenditure on articles costing not more than Rs. 25/-. This contingent grant should be recouped from time to time on production of proper vouchers duly signed by the head of the department. It should be the duty of Principals and Heads of departments to see that they do not, in any circumstances, exceed their allotted grant for the year. Unspent balances of grants should not lapse but should be allowed to be carried over to the next year. This will do away with the temptation to incur unconsidered expenditure toward the end of the year in order not to let the unspent balance lapse. Audit and accounts rules should be changed for this purpose.

VI.—Marine Biological Stations.

25. *Present Position of Biological Sciences.*—The study of biological sciences in our universities was started at a much later date than that of physical sciences, and even now , at a number of colleges and universities, Biology is taught only up to the undergraduate level and they have no provision at all for post-graduate teaching and research. In most of our schools Science still means Physics and Chemistry only, and Biology is almost completely neglected. Further, facilities for teaching and research in Biology are very much restricted in the whole country. As a late-comer, Biology is still treated as a cinderella amongst the sciences, even though it has made importent contributions to man's understanding of himself and his environment. One of the serious handicaps under which biological teaching and research suffer in this country is the absence of marine biological stations. In point of fact, there is more of animal life in the sea than on land and in fresh waters combined, and many of the

large groups of the animal kingdom are confined exclusively to the seas. Of the 24 universities that teach Biology either up to the undergraduate or post-graduate level, only *four* (Bombay, Madras, Andhra and Travancore) are situated on the sea-coast, while the remaining twenty are more or less completely land-locked. Even the maritime universities have not yet provided adequate facilities for marine biological work in the way of marine aquaria, trawlers, nets, etc. There is a marine aquarium at Trivandrum with running sea-water, while the one at Bombay belonging to the Fisheries Department is still in the process of construction. The Madras university laboratory has been in existence for some years but has still no arrangements for running sea water for proper work in marine biology, while the Madras Aquarium which was a fine institution was taken over for military purposes during the War and has not yet resumed its original pre-war functions, and has been, so to speak, lost to marine biology. No laboratory possesses a proper boat for collection and dredging work.

26. *Incomplete Teaching, Restricted Fields of Research and Economic Loss.*—The absence of marine biological stations keeps our biological teaching very incomplete and inefficient, and seriously restricts our fields for research. Students in our inland universities are obliged to study marine animals and plants only as preserved specimens and not as living organisms. Most of our students of zoology in inland universities take their M.Sc. degrees without ever having seen a marine animal alive in its natural surroundings ; in fact, many of them have never seen the sea at all. Even many of the teachers of these universities are equally ignorant of or out of touch with marine life, and cannot contribute anything of value either in the wide field of marine biology and oceanography or in the other equally wide field of that side of fundamental research which depends upon marine animals or plants as materials of study. Occasionally short trips of a week or ten days to a sea-side place are organized, but their value is very limited. As a result, practically nothing is known of the large sea-weeds or the different kinds of blue, green and red algæ of the Indian seas ; the life-history of no important Indian fish has yet been worked out and we know nothing of the food, migration and enemies of even the most important food-fish in our seas. The Indian sea-fisheries are still in their infancy but have great possibilities and it is necessary that scientific teaching and research should proceed side by side with the commercial exploitation of the sea[1].

[1] Rao, H. Srinivasa—The Urgent Need for Biological Stations in India, 1942.

If one were to state in a single phrase the outstanding change that has come about in zoological science during the last 50 years, it would have to be a statement concerning the transformation of zoology largely from a descriptive to an experimental science. Unfortunately, zoology in this country is still very largely in the descriptive stage, fully 50 years behind time, and, excepting a couple of workers, no one in India has been able to contribute anything of importance to the science of experimental zoology, experimental embryology or comparative physiology. Most of the recent work on fertilization, artificial parthenogenesis, spiral cleavage and many other aspects of experimental embryology as also the work on the transmission of nervous impulse, osmotic regulation, non-acoustic functions of the ear, locomotion of fish, etc., in experimental zoology has been done in the marine laboratories of the West and all these fields of research are at present completely denied to Indian workers for want of facilities which can be available only at marine biological stations. Further, inland biological laboratories all over India import thousands of rupees worth of marine biological material for class dissections, section-cutting, embryology etc., from Europe and America. If we have well organized marine stations in India, each with a supply department, part of their expenses would be met from the income derived from the sale of biological material, and the country will become self-sufficient in this respect.

27. *Marine Biological Stations in other Countries.*—The realization that instruction in biological sciences remains incomplete and inefficient unless students and teachers work at the sea-shore in direct contact with the life of the sea has been responsible for the phenomenal growth of marine biological stations in Europe and America. France has perhaps the largest number of stations amongst the European countries. The universities largely control these stations which combine the functions of teaching and research with a scientific study of the fisheries. Great Britain has *five* large marine stations besides a number of small ones. Similarly, Ireland, Germany, Norway and Sweden have their biological stations. Italy has one of the oldest and best stations in the world at Naples founded by Anton Dohrn as early as 1872. The U.S. S. R. has a station at Murmansk and others at Varna and Sebastopol. Altogether there are 75 stations in Europe, large and small. The United States has the distinction of possessing the largest marine biological station in the world at Woods Hole, besides many other large stations at La Jolla and other places. At Woods Hole there are about 400 workers in summer months. Regular courses in general marine zoology, experimental zoology, comparative physiology and experimental embryology are held every summer under the supervision of university teachers, and

students from all over the country come to attend them ; these courses are recognised by all the universities of the United States for credits in biological courses. Besides, Biology teachers from all over the country make use of this fine laboratory and its first-class library for their research work. There is an atmosphere of scientific camaraderie at the place, and the station is worthily noted for the high quality of its research work during the last 70 years or more. In Great Britain also it is customary for all undergraduates studying zoology to attend a six to eight weeks' course at one of their marine stations (*e.g.* Plymouth, New Castle, Port Erin, etc.) during Easter or summer. Besides, a large number of university research workers occupy tables maintained by their universities at these stations, and carry on their work over several months. In addition, some of these stations, (*e.g.* Plymouth) maintain a large permanent staff of zoologists, physiologists and chemists whose main function is to explore the sea and the sea-life from all scientific aspects. Further, all the big marine stations, *e.g.* Woods Hole, Naples, Plymouth, etc., maintain supply departments for the supply of biological material, live or preserved, to the universities.

28. *Schemes for Marine Biological Stations in India.*—Biologists in India have long been pressing the need of these biological stations upon the attention of the Government of India. As early as 1920, Dr. Stanley Kemp, Superintendent of the Zoological Survey of India, was sent on deputation to Europe to study the organization of marine biological stations and to make plans for such stations in India ; on return he drew up a scheme which was supported by two influential scientific bodies, the Board of Scientific Advice in India and the British Association for the Advancement of Science in England. But the scheme never materialized. From 1924 onwards at least *five* presidents of the zoology section of the Indian Science Congress have emphasized this deficiency in our equipment for biological teaching and research and have urged the need for biological stations. The Secretaries of the Indian Science Congress addressed the Government of India, all the Local Governments and the universities on the subject as long ago as 1924, but to no effect. Only in 1944-45, when there was acute food-shortage in the country, did the Government wake up to the realization that there was plenty of fish food in the sea and could be harvested. The Government of India started a Fisheries Department in the Ministry of Agriculture, but found that they had neither the proper equipment, nor a properly trained personnel for scientific developmental work on fisheries. Scores of scholars were sent over to U. K. and U.S.A. for two to three years' training in fisheries to come back and man the newly started

Fisheries Department. One cannot help thinking that if the scientific advice tendered to the Government about six times from 1920 onwards had been acted upon, we would have had several well-established marine stations at a cost probably less than what we have had to spend on overseas scholarships, would have accumulated a quantity of relevant data regarding our marine fishery resources, and would have had the requisite trained personnel in the country ready to go into action immediately at the time of the crisis. We have already lost at least twenty-five years, but must now ensure that we do not lose any more time. After working for about two years in temporary quarters at Madras, the Fisheries Department, we understand, are now ready to occupy their permanent buildings at the Central Marine Fisheries Station at Mandapam and start work immediately.

29. *Suggested Measures.*—We consider that the training of a B. Sc. Honours graduate or an M.Sc. in zoology is incomplete unless he has had a six to eight weeks' course in marine biology, and that it is necessary to take immediate measures to make up this deficiency in our biological teaching and research. According to the figures collected by the Scientific Man-Power Committee[1] the outturn of B.Sc. Honours graduates and M.Scs. in zoology from the inland universities at present is 96 per year. As more colleges and universities start M.Sc. classes in zoology and extended facilities are made available at the existing institutions, the annual outturn will increase. We should, therefore, make arrangements for 6 to 8 weeks of training of 100 students every year in marine zoology. As this large number cannot be trained at one place, we consider that the Central Fisheries station at Mandapam and the four maritime universities should share the work of giving courses in marine zoology to the zoology students of inland universities. The scope of the Mandapam Fisheries Station should be enlarged so as to enable it to function not only as a Fisheries Station but as a Marine Biological Station in the largest sense. Its function should be research as well as teaching. To start with, it should organize a six to eight weeks' well planned intensive course in general and systematic marine zoology during May and June for about 20 Honours and M. Sc. students from the several inland universities. It will be of great advantage if inland universities should depute their younger teachers also to attend this course so that they can enliven their teaching at their own universities. The station should also reserve a few tables for and afford all facilities to teachers and research students from the universities who may like to spend some time for research there during summer or any other time of the year. It will be necessary to provide accommodation and boarding

[1] Scientific Man-Power Committee Report (Printed Document), Pages 253—261.

facilities for these temporary visitors. Plans should also be made at once for starting courses in comparative physiology and general and experimental embryology in the near future. All these courses can be made successful only with the co-operation of the universities, which should make it obligatory for their B.Sc. Honours and M.Sc. students in zoology to attend these courses and give them credit for work at this station. Further, the Mandapam station should maintain a permanent supply department to maintain an adequate supply of biological material and sell it to the inland universities. It is of the utmost importance that this station should maintain the closest contacts with the universities and should encourage university teachers and students to make the most liberal use of marine biological facilities at the station.

Further, the zoological laboratories of the four maritime universities of Bombay, Madras, Andhra and Travancore should be strengthened so as to enable them also to cater for the needs of the Honours and M.Sc. zoology students of the inland universities. The Marine Laboratory at Travancore can immediately organize a course in marine zoology during winter for 15 to 20 students. The Director should be requested to prepare plans for organizing a course and should be given the necessary grant-in-aid for the purpose. Andhra university has a very well organised zoological laboratory at Waltair not far from the sea. Either the present laboratory should be equipped with running sea water for marine biology work or a small new laboratory be built at Lawson's Bay so that it can accommodate 16 to 20 students at a time. This laboratory should be very convenient for students from Northern and Eastern universities for a summer course in marine zoology. The Madras university marine zoology laboratory has good accommodation and is conveniently situated on open sea-coast. With a capital grant and a small maintenance grant it can instal a plant for running sea water and can form a very good centre for marine biology courses. The Bombay Aquarium, in process of construction, will have running sea water already installed, but it will need laboratory accommodation, and one or two members of the teaching staff of the Bombay colleges with the co-operation of the Fisheries staff can conduct a marine biology course. As far as possible these courses at different centres should be so planned as to ensure the maximum utilization of the facilities available. All these four stations should have their supply departments.

VII.—*Border-Line Sciences.*

30. Newer Fields of Research.—Scientific knowledge is advancing at such a rapid rate as to open up continually newer and newer fields of research ; of these, none have been so richly productive of useful results during recent years as the so-called border-line sciences, like Biochemistry, Biophysics, Geochemistry, Geophysics, etc., which span the frontiers between different sciences. Training in these sciences can only be given at the post-graduate level as one must have a good fundamental knowledge of at least two basic sciences before taking up any of these newer sciences. As we are unfortunately still deficient in our average teaching and research equipment and standards in basic sciences, we have not yet provided enough facilities for these newer fields of research in our universities. Biochemistry is probably the earliest of these newer disciplines and aims at winning all possible knowledge of the chemical nature of living organisms in order to understand what constitutes the "breath of life ". Except at a very few places, Biochemistry in our country is still regarded as a sub-department of Physiology at the medical colleges. It is time we realized the importance of and the enormous possibilities of research in this branch of science and recognised its status by having separate post-graduate departments of Biochemistry at most of our universities. These departments should not confine themselves to research only, but should conduct regular teaching at the post-graduate level. Again, the applications of Physics to Biology have substantially advanced our understanding of several biological phenomena, *e.g.*, the use of the cathode ray oscillograph in the study of the transmission of the nervous impulse, and that of the role of ultrasonic vibrations in the hearing in bats and insects, and the use of Electron microscope in the study of the protoplasmic structure of tissues. Similarly, Geology has developed several specialities like mineralogical chemistry, palaeozoology, palaeobotany, and geophysics ; they are parts of geology, but are also parts of chemistry, biology and physics. The science of geophysics, dealing with the investigation of magnetic, gravitational, seismic and other physical properties of the earth has during the last twenty years developed methods of oil prospecting by which it is now possible to locate oil even beneath depths of 6000 feet. Facilities for teaching and research in these earth-sciences of economic importance are still very inadequate in our universities and need considerable expansion.

The study of these border-line sciences ultimately depends on Physics, Chemistry, Biology and Geology and unless these basic sciences receive adequate maintenance grants for development, the border-line sciences will also suffer.

VIII.—Recommendations.

31. We recommend :—

(1) that there should be a uniformity in the regulations for the M.A. and M.Sc. degrees. A pass graduate should study for at least two years and an honours graduate for at least one year ; teaching for these degrees should be properly organized by means of regular lectures, seminars and laboratory work. The course should include advanced study of one special subject and training in methods of research, but *not* actual research. Admission to these courses should be on an all-India basis at every university. There should be the closest personal touch between the staff and the students.

(2) that the training for the Ph.D. degree should extend over a period of at least two years. A Ph.D. student should not become a narrow specialist, but his grasp of his subject should be characterized both by breadth and depth. The examination should include a thesis and a *viva voce* examination to test the candidate's general knowledge of the whole field of the subject. Admission to Ph.D. courses should be made with great care and should be on an all-India basis.

(3) that teaching universities should develop research training in as many branches of knowledge as they can, while the affiliating universities should develop post-graduate and research departments in subjects in which they can secure services of scholars of high quality.

(4) that there should be a certain number of Research Fellowships in each university for students who have taken the Ph.D. degree and wish to pursue a career of scholarship and research. These Fellowships should be awarded only to those Ph.Ds. who have shown a high degree of scholarship and competence for research.

(5) that the D.Litt. and D.Sc. degrees should be awarded on published work of outstanding quality and conspicuous originality.

(6) that university teachers should give the community punctuality, efficiency and devotion to duty in relation to

their teaching work, and new ideas and newer methods in relation to their research work.

(7) that the ample resources available in our country for research in languages and literature, classical and modern, as also in Philosophy, Religion, History and Fine Arts should be properly utilized by scholars.

(8) that, as there is an acute shortage of scientific man power and is at its worst so far as it concerns teachers in science, where it is much more *qualitative* than *quantitative*, it is desirable to train a large number of scientists in the hope that we may get a few men of outstanding calibre.

(9) that the Ministry of Education should institute a large number of scholarships and free places for really good students at the M.Sc. and Ph.D. stages. There should be a suitable machinery for the selection of students for these scholarships and free places, which should function as a body for "science talent search".

(10) that the teaching personnel of the scientific departments of universities should be strengthened by the creation of additional professorships, readerships and lecturerships. In selecting the personnel, emphasis should be on *quality* rather than on numbers.

(11) that fundamental research should be the primary concern of the universities, and universities should not be precluded from taking up special applied problems concerning their own regions.

(12) that generous capital and maintenance grants should be made to the scientific departments of universities to enable them to extend and consolidate their post-graduate and research facilities, as has been done in Great Britain where the maintenance grants have recently been trebled.

(13) that, in order to make up the serious deficiency in biological teaching and research in our universities, we should have *five* marine biological stations. The scope of the Central Fisheries Station at Mandapam should be enlarged so that it can function as a Marine Biological Station in the largest sense. Further, the universities of Bombay, Andhra, Madras and Travancore should be

given capital and maintenance grants to conduct teaching and research in marine biology more effectively, as well as to cater for the needs of inland universities. All these five stations should organize six to eight weeks' courses in systematic marine zoology to start with, and then add courses in comparative physiology and experimental zoology, and general and experimental embryology. They should also maintain supply departments for the supply of marine biological material to inland universities.

(14) that greater facilities should be provided for study and research in border-line sciences, like Biochemistry, Biophysics, Geochemistry, Geophysics, etc.

CHAPTER VII

PROFESSIONAL EDUCATION

INTRODUCTION

1. What is a Profession and What is Professional Education ? 2. The Responsibilities of Professional Education. 3. Fundamentals of Professional Education.

1. *What is a Profession and What is Professional Education ?*—In a vital and rapidly evolving society the words " profession " and " professional " elude precise definition. For a long period in the West there were three recognized learned professions, theology, law and medicine. These had a prestige which was highly prized and zealously guarded.

Then architecture, and later engineering, came to be accepted as professions. With the recognition that there are numerous callings which demand disciplined and scholarly training, the designation " profession " has come to be claimed by still other occupations. Dentistry, teaching, journalism, librarianship, forestry and nursing are some callings to which the status of profession is generally conceded in mature societies, and the list is by no means complete. It may be that the words " profession " and " professional " will cease to be associated with specific callings, and will relate instead to standards and attitudes.

Any man or woman who has prepared for exacting service by thorough and disciplined scholarship and training, and who lives and works in the spirit of professional standards, may well be recognized as a member of a profession. Also, the day probably is approaching when no private business or any other exacting calling can claim the respect and protection of society except in so far as it lives and operates by professional standards.

Professional education is the process by which men and women prepare for exacting, responsible service in the professional spirit. The term may be restricted to preparation for fields requiring well-informed and disciplined insight and skill of a high order. Less exacting preparation may be designated as vocational or technical education.

2. *The Responsibilities of Professional Education.*—If our imperilled civilization is to survive, our keenest and most disciplined minds, and to a very considerable degree this means our professional men, must devote their moral energies and intellectual powers to solving current and long range problems.[1] The civilized peoples

[1] Adapted from a talk by Professor Elliot Dunlop Smith, at the Inter-Professional Conference on Education for Professional Responsibility at Pittsburg, Penn., U.S.A. May 1948. Some other ideas and expressions are taken from Professor Smith and from other speakers at this conference.

of the world are puzzled as to why intelligence and education do not bring peace and order, as to why democratic constitutions do not bring democracy, why religion does not bring brotherhood.

One reason is that while professional men in a large degree are in key positions in modern society, professional education has failed in one of its large responsibilities, that of developing over-all principles and philosophy by which professional men should live and work. To the extent that such purpose and philosophy are lacking, the engineer may be at the service of anyone who will pay him well, regardless of the social worth of his services ; the lawyer's skill may be for sale for right or wrong (with some professional rationalizing), while the physician may seek the place of largest income, rather than that of greatest service. While each may have high skill, the total effect may be great internal stress and even social deterioration.

3. *Fundamentals of Professional Education.*—The foundation of professional education should be not only technical skill, but also a sense of social responsibility, an appreciation of social and human values and relationships, and disciplined power to see realities without prejudice or blind commitment. While professional men largely set the pattern of national life, that pattern is much influenced by their earlier intellectual and moral experiences, especially their professional training. The standards and motives of professional practice in the coming years are largely being made in the professional schools of today. An increased sense of social responsibility in the professions cannot be brought about in the main by trying to re-educate mature professional men. It requires a changing of professional education in method and spirit, so that young men entering the professions shall be living and working in the spirit of the new, democratic India.

One of the primary needs is that the professional man shall see the whole problem with which he deals, not merely its technical phases. All technical education should transmit technical understanding, skill and method, not as an isolated discipline, but in its total human and social setting. Failure to do that is largely responsible for failure of modern civilization to produce social peace and harmony.

As has been said by modern students of professional education, when professional students are taught the humanistic, social and basic science subjects with the methods of professional education, the increase in power and zest for learning is in some measure comparable to that which characterizes the shift from the textbook learning of law or medicine to the case and clinical methods.

The problem of professional teaching is one of content as well as method. If the professional student has acquired wisely selected basic knowledge and the professional way of thinking and working,

with representative increments of particular knowledge, then he can himself acquire the particular knowledge he especially needs from time to time. If he has mastered the art of using fundamental knowledge to get particular knowledge, the amount of particular knowledge he must accumulate is greatly reduced, and time is made available for the teaching of fundamentals. The converse is not true. If his time is spent in cramming his mind with facts, that very process may make him less competent to work with fundamentals. Every practitioner of professional stature knows that human and social problems are inherent in all major professional questions and must be dealt with if such questions are to be handled on a professional level. When and only when problems are thus fully dealt with is the student in facing a problem forced to ask the truly professional question, "What, *all things considered*, should be done ?" Only then can a professional man accept moral responsibility for his own professional conduct, and determine for himself what values his technical competence will serve, instead of leaving this to be determined by others. Professional study is so demanding that unless the spirit and habit of seeing the total problem, professional, human and social, are in the very spirit and texture of professional teaching itself, human and social considerations will tend to fade into the background with memories of adolescence. General human motive and purpose need to be so much a part of professional training that to the student they will be one and inseparable.

There is a fundamental unity to all scholarly and professional thought. For students to come to recognize this unity it is necessary to have teachers with the breadth of mind and outlook to work out and to use in their courses common expressions of the common fundamentals of effective thinking and learning. The various professional schools in a university might well work together at developing these fundamentals. By such common exploration, the stature and quality of all professional teaching might be increased. The common basic methods for using fundamental knowledge in solving particular problems, on being applied in widely divergent fields, may become so characteristic of a university that its students will absorb those methods as one learns the mother tongue. To the extent that the same fundamental methods apply in all professional fields, the professions can understand and cooperate with each other. Also, in professional teaching, the development of fundamental methods in one profession will tend to serve all professions.

We shall now consider in some detail the courses of study, duration, etc. of the following professions: 1. Agriculture. 2. Commerce. 3. Education. 4. Engineering and Technology. 5. Law and 6. Medicine and refer to a few new professions.

A.—AGRICULTURE

I.—Indian Agricultural Education to the Present.

1. *The Background of Agricultural Education in India.*—Until about a hundred and fifty years ago Indian agriculture had an indigenous organization and structure which quite reasonably served its needs. The villages were largely self-sustaining. With the development of British rule, the industrial revolution, and the coming of a profit economy, the old village structure tended to break down. That the depressed condition of the Indian farmer was not due to lack of industry and skill is indicated by the report of Dr. J. A. Voelcker of the British Royal Agricultural Society, who was sent by the Society in 1889 to study Indian agriculture. He wrote, "Certain it is that I, at least, have never seen a more perfect picture of careful cultivation, combined with hard labour, perseverence, and fertility of resource than I have seen at many of the halting places in my tour." The fact that the farmer was illiterate did not mean that he was uninformed or unskilled in his way of life.

During Dr. Voelcker's visit, in 1890, an agricultural conference was held and certain recommendations were made. As a result, an agricultural chemist to the Government of India was appointed that year. Ten years later an Inspector-General of Agriculture and a mycologist were appointed, and in 1903 an entomologist was added. At about the same time a donation of 30,000 pounds by Henry Phipps of Chicago was used to found the Pusa Research Institute. In 1904 the Indian Cooperative Societies Act was passed, in 1905 the central and provincial Departments of Agriculture were expanded and in 1906 the Indian Agricultural Service was constituted. These and similar actions indicated an awakening to the needs of agriculture. However, their total effect on the great mass of Indian agriculture was slight.

In 1928 a Royal Commission on Agriculture in India was appointed to study agriculture and rural life. It made an exhaustive report on research, marketing, financial credit and rural welfare. One of its main recommendations was that a research institution should be established. The Commission concluded that however efficient an organization might be built up for demonstration and propaganda, unless it was based on the solid foundations provided by research, it was merely a house built on sand.

As a result of this recommendation, the Imperial Council of Agricultural Research was incorporated in 1929. Almost immediately afterward there followed the great depression, during which Indian agricultural income was reduced by about half, while interest on debts, rents, taxes and the prices of manufactured goods did not similarly fall. Therefore the farmers' plight became steadily worse. By the end of the nineteen-thirties recovery had begun, but then came the second World War, and attention was centred on military considerations. However, the Council of Agricultural Research has grown and expanded its work.

2. *Present Agricultural Education in India.*—During the half century in which some official attention has been given to agriculture, a number of developments have provided the beginnings of agricultural programme and policy. Twenty-one institutions for higher educational work in agriculture have been established. They are :

Agra : Balwant Rajput College (Agricultural section opened, 1941)

Allahabad : Allahabad Agricultural Institute (Besides B.Sc. (Ag.) also B.Sc. in Agricultural Engineering, and Indian Dairy Diploma)

Amritsar : Government Agricultural College (Located at Khalsa College, Amritsar, est. 1947)

Anand : Bansilal Amritlal College of Agriculture (est. 1947)

Banaras : College of Agriculture, Banaras Hindu University (est. 1945 ; Besides first degree, also M.Sc. in Agricultural Botany for a number of years)

Bangalore : Agricultural College and Research Institute, Hebbal (est. 1946)

Bangalore : Indian Dairy Research Institute (Post-graduate work ; est. 1944)

Baptala (Madras Presidency) : Agricultural College (est. 1945)

Coimbatore : Agricultural College and Research Institute (Affiliated to the Madras University for B.Sc. in 1932)

Delhi : Central College of Agriculture (est. 1947)

Delhi : Indian Agricultural Research Institute, New Pusa, New Delhi (Post-graduate work ; established at Pusa, Bihar in 1903, shifted to New Pusa, Delhi in 1936)

Dharwar : College of Agriculture (est. 1947)

Hyderabad (Deccan) : Osmania College of Agriculture (est. 1946)

Indore : Institute of Plant Industry (Post-graduate work, est. 1924)

Kanpur : Government Agricultural College (First degree and post-graduate work, est. 1906)

Khamgaon : G.S. College of Science and Agriculture (Agricultural section opened 1948)

Lakhaoti : Amar Singh K.E.M.U. Jat College (Agricultural section opened 1941)

Mukteswar (Also at Izatnagar) : Indian Veterinary Research Institute (est. Poona 1890 ; transferred to Mukteswar 1893 ; Izatnagar Branch 1913 ; Post-graduate work)

Nagpur College of Agriculture (Affiliated to Nagpur University in 1945)

Poona : College of Agriculture (est. 1947)

Sabour (Bhagalpur) : Bihar Agricultural College (est. 1945)

AGRICULTURAL COLLEGES IN INDIA
Growth in Enrolment 1924-48.
No. Applying and No. Admitted.

Year	No. of Colleges	No. Applied	No. Admitted	Remarks
1924	2	82	30	
1925	2	86	36	
1926	2	119	44	
1927	3	209	109	
1928	3	216	119	
1929	3	254	138	
1930	3	215	136	
1931	3	189	105	
1932	4	348	135	
1933	4	291	140	
1934	4	330	195	
1935	4	376	193	
1936	4	532	188	
1937	4	457	196	
1938	4	482	173	
1939	5	918	255	
1940	5	770	272	
1941	6	795	440	
1942	7	917	457	
1943	7	1044	504	
1944	8	1463	722	
1945	11	3139	956	
1946	13	3389	1250	
1947	17	3808	1551	
1948	17	3261	1448	

The Table gives the number of applications and admissions to these colleges from the date of their establishment to 1948. With only about 1500 students being admitted to all agricultural colleges each year, in case half of them should graduate, this would represent only three agricultural graduates per year per million of the farming population.

We are informed by heads of agricultural schools that of those who do graduate, not more than two or three per cent return to agricultural communities. In 1936 and 1937, Sir John Russell, Director of the great Rothamsted Experimental Station of England, visited India at the request of the Imperial Council of Agricultural Research, to review the condition of Indian agriculture. After an extended tour of agricultural stations and villages he reported that, in general, the men who actually till the soil are scarcely touched by the national programme of agricultural education.

The cases where influence of agricultural research has been felt are largely those in which industry has so directly impinged on agriculture that the technical demands of industry could impress themselves on agricultural practice. The Indian Central Cotton Committee, organized by the government and financed to the extent of 18 lakhs a year by a tax on cotton, is such a case. It has operated since 1923, and has impressed its standards upon cotton farmers. Similar committees, similarly financed, have been organized for jute, sugar, lac, cocoanut, tobacco, oilseeds, coffee, tea and rubber. It is reported that about 80 per cent of the sugar-cane grown and about 50 per cent of the jute are raised from improved seed, since the manufacturers are able to influence farm practice. Crops in which an organized industry does not take a direct interest do not fare so well, though improved varieties of wheat and rice are coming into general use.

3. *Facilities for Research.*—At the present time the Indian Council of Agricultural Research issues about four publications and carries on a variety of research. More or less associated with it are the Indian Institute of Fruit Technology, established in 1945 ; the Central Agricultural Marketing Department, originated in 1934 with the appointment of a " marketing expert " ; the Imperial Bacteriological Laboratory, founded in 1890 as the Indian Veterinary Research Institute ; the Indian Dairy Research Institute, initiated in 1923 ; and the Rice Institute founded in 1946. In addition there are the commodity committees already mentioned and a considerable number of other committees dealing with various phases of agriculture. In addition, facilities for higher and post-graduate training in certain

subjects in agricultural science are available at the universities of Agra, Banaras, Bombay, Madras and Nagpur ; and also at the India Agricultural Research Institute, New Delhi ; the Indian Dairy Research Institute, Bangalore ; the Indian Veterinary Research Institute, Izatnagar ; and the Agricultural Meteorological Section, Meteorological Office, Poona. There are also facilities at a few universities for pure science graduates for research in some basic agricultural sciences like soil science, plant breeding and plant physiology.

The number of M.Sc.s and doctorates turned out from the agricultural colleges in India during 1946-47 was 74. Also, 156 candidates received post-graduate diplomas in agriculture, veterinary, forests, dairying, and allied sciences in the same year. According to the Report of the Scientific Manpower Committee in 1948, it is estimated that facilities for training in post-graduate research work in agricultural sciences are available in India for only 166 students. There are at present no facilities worth the name for training in soil survey or soil conservation.

We have not secured information as to the extent or effectiveness of the agricultural experiment stations of India.

In view of the vast extent and the great importance of Indian agriculture it is obvious that as yet only a bare beginning has been made in meeting the needs of agricultural education on the university level.

As an illustration of what can be accomplished in the development of a democratic system of agricultural education we give in the following section a description of the Land Grant College System of education of the United States.

II.—Agricultural Education in the United States.

As we have been sending over to the United States some of the chief officials in the Agricultural Ministry and other leaders of the agricultural industry for the purpose of studying agricultural education in that country, and as we have also been sending for some years batches of students on scholarships for the study of various kinds of agricultural subjects like agronomy, animal husbandry, food processing and the study of certain crops common to India and the U. S. A., such as sugar-cane, rice and tobacco and as many other technical subjects are being studied and experts developed for service to our country, it will be useful to refer to the development of agricultural education in the U. S. A. The results there have been so impressive and so relevant as to justify a brief description.

4. *Beginning of Agricultural Education.*—Previous to 1862, there was no agricultural education in the United States worthy of the name. In 1862, an act of the Congress of the United States, during the war between the States, when the nation was engaged in a bitter struggle for survival, laid the foundation for the system of agricultural education now in vogue in all parts of the country.

On July 2, 1862, Abraham Lincoln signed the Act which made available to all the States of the Union grants of land in the public domain for the establishment of colleges that would teach agriculture, mechanic arts, and offer military training, without excluding the humanities or classics. Previous to the Act, the first land-grants for education were made in the Northwest Territory under a historic Ordinance in 1789 which included this declaration " Religion, morality and education being necessary for good government, schools and the means of knowledge shall for ever be encouraged."

Every State in the Union and all the seceding States accepted the land-grants through their legislatures, either immediately or within a few years after the close of the War. These land-grants became the permanent endowments of what came to be known as " land-grant colleges." Thus came into existence a group of colleges and universities which have been described on good grounds as "the most comprehensive system of scientific, technical and practical higher education the world has ever seen."

There are now seventy of these universities and colleges. Each State and Territory has at least one and eighteen States have two. In about half the States, they are the State Universities ; in New York State, the land-grant University, Cornell, is a combination of privately-endowed and publicly-supported colleges ; in the rest of the States, the land-grant college or university is a separate independent institution. All but two or three have agricultural colleges.

These institutions came into existence amid a storm of opposition and ridicule. All of the earliest universities in America had been established under religious auspices and were patterned on the Renaissance universities of Great Britain and Europe, with curricula for the learned professions, chiefly theology, the classics and mathematics.

The new institutions constituted a programme of complete democratization of higher education for the masses, the introduction of science into the curriculum, with its applications, principally in agriculture and the industrial arts and crafts. They were called the " Peoples Colleges."

President Milton Eisenhower, of the land-grant college of Kansas, at the 75th anniversary of the Colorado Agricultural and Mechanical College said : " Despite all the difficulties, however, the 25 years following the passage of the Morrill Act[1] were a significant epoch in the development of American education. At the beginning, the professor of science was empty-handed. But gradually more and more demonstrable facts about agriculture and the industries were worked out. Then, definite principles were established. Traditional, empirical methods broke down and science won its place—won its place so definitely that at the close of this first 25 year period, the Congress passed an act establishing agricultural experiment stations within the land-grant colleges. Laboratories and experiment fields now provided the source materials for the entire Land-Grant system of liberal and practical education. Class room instruction and research stimulated one another. Throughout the country, Land-Grant Colleges pushed back the walls of intellectual darkness, each discovery opening new potentialities much greater than itself.

In the next 25 years *the general public*, particularly farmers, cast aside their doubts. They developed a genuine respect for science. Indeed, their complaint, by 1914, was not that science was too slow or fruitless, but that the knowledge in the laboratories was fully twenty-five years in advance of general farm practices. Hence, they demanded that new steps be taken to make the results of science available to the men on the land.

So the Federal-State Extension system was launched. Here was another unique Land-Grant experiment : An adult educational system reaching from the laboratories, class rooms, and experiment fields to men and women throughout rural America.

Thus in a short half century, a new concept of education had overcome the contempt of the classicists, had made exact science the partner of the industrial classes, including farmers, and had demonstrated that higher education is not the prerogative of an aristocracy. In that half century, the Land-Grant Colleges had enlarged and enriched all types and phases of education, not only at the college level but at the secondary level as well. For teachers trained in the Land-Grant Colleges and Universities in agriculture, industrial arts, home economics, basic sciences, and the liberal arts were introducing new courses into high schools, just as extension agent were carrying information to the farms and homes of the land. The college student no longer looked only to the law, medicine, or the ministry. There were 3,000 occupations open to him. The days of academic snobbery had changed to a democratic conception of education in relation to a rapidly developing society."

[1]The Land-Grant Act of 1862.

The Land-Grant institutions now enrol in their register approximately as many students as the other 1,200 colleges and universities combined—about a million students. The University of California alone in its two branches enrols 40,000 students.

In addition to the students taking their courses of study in the classes, a large section of the adult population is reached in the open farm country, in the villages and the cities of the entire nation through extension services, bulletins, package libraries, radio broadcasts, itinerant teachers, demonstrators and through short courses for all professions and vocations. As stated by the President of the University of Wisconsin, the entire States have become the campuses of the Land-Grant universities and colleges. These not only include all the agricultural colleges but most of the great engineering colleges such as Purdue, Massachusetts Institute of Technology, Cornell, Illinois, Iowa State, Minnesota, and Washington.

President Conant of Harvard, a few years ago, at the inauguration of a new President at Ohio State University, proclaimed the land-grant university as in the vanguard of American higher education—an advance upon the older Renaissance type.

5. *The Organization of Agricultural Education.*—The American agricultural education programme operates at the high school, college, university and adult levels and it performs its services through three main avenues: research, teaching and extension.

All that is done is on a co-operative basis between federal, state and local authorities. The Federal Government participates by grants, which were originally of land, but after the first act, in recurring block grants of money, distributed by acts of Congress for periods of usually five years on some definite principle. For example, the grant of money to a given agricultural college in a State is usually made on the basis of the proportion of the rural population of the State to the total rural population of the United States. The institutions are entirely autonomous in carrying out the programmes in conjunction with local authorities. All grants are accepted by acts of the State Legislatures but neither the Federal nor the State Governments have any further powers except auditing and determining whether grants have been spent in accordance with the conditions and purposes of the acts. Most of the federal grants require that the State find an equal amount of money. Some grants may be matched jointly by the State and the County (a district or local division of a State), while a few require no matching.

The principal stimulus to agriculture on the High School level came with the passage of an act of Congress in 1917, appropriating money for the preparation of teacher training, both pre-service and in-service preparation, as a co-operative venture with teacher-training institutions. In its principal features the Act

(1) provides for a permanent and recurring appropriation for the preparation of teachers, supervisors and directors of agricultural subjects ;

(2) makes it mandatory for each State accepting the provisions of the act to create a State Board of Vocational Education to co-operate with the Federal Office of Education ;

(3) requires each State Board to prepare plans for vocational education, including teacher training, and makes it responsible for the supervision of the programme under certain specifications ;

(4) stipulates that funds appropriated for the preparation of teachers shall be matched dollar for dollar by the State or by the local community or both.

After plans are approved by the United States Office of Education, the State Board becomes entirely responsible except for proper accounting to the Office of Education.

Before this act was passed, less than half the States gave any aid to secondary schools for the teaching of agriculture. A few permitted such instruction without giving aid. The real development of teacher training began with the passage of the Federal Act. At present, effective teaching of agriculture is general in the suburban high schools of the country. Seventy-two colleges and universities are training teachers and supervisors of vocational agriculture. Of this number 63 are land-grant colleges. These institutions offer a four-year degree course as pre-service preparation for teachers of agriculture in the schools and some additional training for itinerant supervisors who go out to the rural high schools for constant improvement of the teaching and refresher instruction.

By these means, a tremendous impetus has been given to the study and teaching of agriculture and to interest in that field. Student organisations began to develop until, in 1928, a national organization was formed, now known as the Future Farmers of America, built around ideals of thrift, service, education, recreation and leadership. This organization has 2,31,694 members in 6,953 chapters or groups. It has had tremendous value in transforming the interest, attitudes and aspirations of rural youth toward American institutions, particularly toward agriculture.

India is just now transforming its high school agricultural instruction from a few basic schools to high schools throughout the agricultural sections. The American experience should be very suggestive and helpful here.

The agricultural programme of the land-grant colleges is built on a tripod :—

(1) the College or Teaching Division ;

(2) the Experiment Station or Research Institute ;

(3) the Agricultural Extension Service.

For the purpose of interpreting the activities of the above organizations, we shall take a typical land-grant University, the University of Florida, and present only the facts. The State of Florida is about an average State in size and wealth and is quite similar to India both in its climatic and agricultural aspects. The climate is subtropical and crops are much the same, for example, citrus, papaya and mangoes are among the common fruits. Florida has many soil deficiencies, insect infestations and plant diseases, and requires scientific method for good production.

6. *The College or Teaching Division.*—The Departments of instruction in the College are : Agricultural Chemistry (administered jointly with the College of Arts and Sciences), Agricultural Economics, Agricultural Engineering, Agricultural Education (administered jointly with the College of Education), Agronomy, Animal Husbandry, Botany, Entomology, Horticulture and Soil-Science.

The Degree course is a four-year course, but the first year and part of the second year are given largely to fundamental subjects and general education.

The curricula are flexible, offering the student opportunity for study along many lines of agriculture. We think that the rigidity in the agricultural degree courses in India is a major defect. In Florida, the courses are so arranged as to offer the student opportunity for study in many agricultural subjects. They likewise permit the student to go into that branch for which he has special ability, and prepare him to meet the problems which arise in that field. The great practical value of these curricula is realized by those who have completed them and have gone back to the farm, grove or ranch, and also by those who, upon graduation, have gone into the agricultural industries and professions.

In addition to laboratory work at the College, field trips and travel courses are arranged so that students have an opportunity to visit various commercial enterprises throughout the State. Visits to farms, groves, ranches, packing houses, processing plants, stock shows, markets, phosphate plants, fertilizer factories and other agricultural industries have proved to be particularly valuable when made by students in company with professors from the College.

The credits for courses are on a unit basis.[1] Sixty-eight semester hours post-intermediate credit are required for the Bachelor's Degree. The unit system has been suggested in India in the report of the Committee on Agriculture of the Central Advisory Board of Education in order to provide the flexibility needed for different types of agricultural service

A minimum of 20 semester hours is required for the main or principal subject in any department. The head professor in the department in which the student specialises, or his nominee, is the student's adviser. A student desirous of proceeding to graduate work finds it helpful to elect as many basic courses as possible, such as chemistry, biology, mathematics, botany, physics, economics, and a language. If he does not expect to take up graduate study, the student finds it profitable to elect as much technical agriculture as possible in departments related to his principal work.

By previous arrangement with the head of the department or Dean, students may, during their course of study, do practical work under competent supervision in any recognized agricultural or related pursuit, and upon returning to College and rendering a satisfactory written report showing faithful service, are entitled to one credit for each month of such work. Such credits may not make a total of more than three. Practical work is especially important for students who have no farm experience. Even though they cannot procure employment under such competent supervision as will give them college credit, they do well to secure work along the line in which they are specialising.

The staff assists students in securing vacation employment.

7. *The Experiment Station* (*or Research Institute.*)—Each Land-Grant College has a main Experiment Station, usually with branch stations and field laboratories in different parts of a State. Because of difference in soil, climate, crops and the diversification of agriculture, it is not possible to prosecute comprehensive and satisfactory

[1] A unit is three hours of work per week during a semester. A semester is a term of approximately four and half months, being half of a collegiate year. Degrees are awarded by accumulating credits, that is a specified number of units, partly required and partly elective.

research in a single location. In Florida, the main Station is located at the University in the centre of the State with twelve branch stations and laboratories in different parts of the State. These concern themselves with different soils ; various crops, including citrus, vegetables, sugar-cane, potato investigations, watermelons, grapes, pecans, strawberries and with cattle.

The results of research affect the production of agricultural commodities on 13,000,000 acres, including pastures of Florida land, which covers approximately 1/3 the total acreage of the State.

Through the researches in agriculture, the economic structure of the State has been built and sustained. Some unused areas of land have been brought into use. The Everglades, a vast area formerly covered with water, have been drained and, by supplying certain deficiencies in the soil, crops like sugar-cane, potatoes, celery and other products have been made possible. All this was the result of scientific research. The citrus crop of Florida is now worth 100,000,000 dollars in a good year. The Agricultural College, the Plant Board, and the Department of Agriculture have twice saved this crop, first when attacked by citrus Kanker, a virulent disease, and again when attacked by the Mediterranean Fruit Fly which destroyed all citrus culture in Hawaii and has infested the groves of Spain. Twenty-five years ago there were no European strains of cattle, either beef or dairy, in Florida, because of tick and lack of proper pasturage. An Asiatic breed, common in India, called Brahma in Florida, was all that was possible. By eradicating the tick and solving certain pasture and feed deficiencies, the State is now teeming with pure-bred herds of Jersey, Guernsey, Angus, Devon, Hereford and other strains. It is interesting to note that many of the cattle-men still prefer the Asiatic breed, as they claim that it serves the dual purpose of beef and dairy products better than the European varieties.

These are only a few of the accomplishments of agricultural research. As an indication of how fast the economic structure of the State is being developed, we may point out that the total agricultural income of Florida was $ 97,980,000 in 1935 ; $ 115,009,000 in 1940 and $ 413,071,000 in 1946.

The same kind of thing that has been done in Florida has been done all over the United States in different degrees. The western States once composed most of what was once called " The Great American Desert. " Much of it now blossoms like the rose and it contains the best school systems in the nation.

Two of the richest and most populous States, Texas and California are situated there. Not many years ago, Los Angeles was entirely in the desert ; to-day it is the fourth city of the United States, alive with industry. Calvin Coolidge, speaking at the dedication of a library at the South Dakota Agricultural College, asserted that the land-grant colleges and their agricultural researches were the principal factors in the amazing development of the West.

There are several acts of Congress making continuous grants to the colleges for support of agriculture and research, most of which must be equalled by the states. There is a central Office of Experiment Stations in the Department of Agriculture in Washington which directs agricultural research at regional experiment stations, as activities of the Federal government. It also advises and helps to correlate the work done by the land-grant colleges, but has no powers over these except auditing.

8. *The Agricultural Extension Service.*—The Experiment Stations constantly develop new knowledge about scientific agriculture. They furnish the blood that gives life to the teaching in the colleges and the scientific information which is the basis of all progress on the farms. The information is translated into action on the farms by the Extension Service which is another co-operative programme of the Federal Government, the States, and the local communities called Counties. Federal funds must be matched by the State, or the County or by both.

The persons who carry this knowledge and demonstrate it to the farmers are called County Agents. They are in nearly every County in the country. Home science is carried to the farm homes by Home Demonstration Agents, all of whom are women. They are found in most Counties.

The Agents are trained in the Agricultural Colleges and have a bachelor's degree in agriculture as a minimum qualification. Many of them have post-graduate training. They are appointed by and work under the control of the colleges. These County and Home Agents are the back bone of practical agricultural progress. They are the popular friends as well as the effective teachers of the rural population.

Their personal visits and demonstrations are supplemented by bulletins from the colleges and the Office of Extension in Washington. There are floods of enquiries and letters which come to the agricultural colleges from the farms and the rural population. These and other questions are answered by letter, by bulletins or by radio. Each day at noon when the farmers are in their homes for lunch, there

is a broadcast from Washington called the " Farm and Home Hour " promoted by the agricultural colleges giving valuable information to the farmers. The broadcast is interlarded with music. Some land-grant institutions put on a " Farm and Home Hour " for their States.

9. *The Educational, Spiritual and Human Values.*—The technical aspects of agriculture have been helpful to the farm people but this did not *satisfy* them. Soon they began to cry out for general education. They wanted to know poetry as well as how to grow peas. They hungered for Shakespeare as well as for soya beans. At the University of Wisconsin, one of the greatest land-grant Universities, they organized a " General Extension Service " which by correspondence, lectures and short courses carried humanistic studies and practically every thing taught in the University, out into the State. For this purpose, travelling lecturers, films, package libraries and every medium of instruction is used. This has now spread to every State in the Union. It accounts for the large amount of general education now provided in the degree courses in agricultural colleges. The County and Home Agents must carry all kinds of education to the farms and homes. This demand is now even more insistent almost than the demand for technical knowledge.

The Four-H Clubs represent the best that land-grant education affords. These clubs provide the religious and intellectual service and cater for work-interests of the teen-age boys and girls of the country. The four " Hs " are the Head, Heart, Hand and Health. They represent the expression of the soul, intellect, hand and bodily welfare. Through the extension service, clubs are formed in which boys and girls on the farms develop their spiritual natures, singly or in groups, produce crops or raise a bullock or poultry or one of a hundred things, they learn to use their hands in crafts similar to our cottage industries, and endeavour to develop healthful bodies. There are thousands of these clubs and hundreds of thousands of boys and girls active in them. Each County has a Fair each year in which boys and girls compete with their products and their accomplishments. Later the winners go to a State Fair and the State winners go to Chicago to the International Fair and Live Stock Exhibition. The national winners go to Washington, are given awards or welcomed by the President of the United States, see the Supreme Court and the Congress in session and learn about their government. There is nothing more inspiring in the youth movements of America.

With hard-surfaced roads, and many farm people with automobiles, rural electrification, radio, television, sanitation and consolidated schools to which free transportation is provided, the rural areas of America are now becoming attractive as a way of life rather than as only a place wherein to make a living. Here the churches are more alive than in the cities. The country has become cleaner physically, morally and spiritually. Hence the reversal in some places of the urbanization of the population and the trek back to the rural areas.

It is no accidental circumstance that in Iowa, about the size of Bihar and the most highly agricultural State in the Union, with perhaps the greatest agricultural college, there is less illiteracy than in any other State in the Union ; or that there is more interest in child welfare, with the finest Pediatric Hospital in the nation. Almost every family has a Cadillac, a Buick or a Ford so that they say the entire population could ride simultaneously out of the State in two or three hours. These spiritual, intellectual and material achievements are the product of the modern rural America. There are many factors which are responsible for this, but the chief is the Land-Grant College.

III.—Agricultural Policy and Agricultural Education.

10. *Agricultural Education will reflect Agricultural Policy.*—Agricultural education will tend to reflect national agricultural policy. Education is a means for bringing about desired ends. If the ends to be achieved are not clear, the means may be in confusion. Our country has characteristic folk ways in agriculture, but cannot be said to have a distinctive national agricultural policy. As we enter upon an independent national existence it is important that a general policy should emerge. The method by which an agricultural policy is developed is of great national importance.

Modern agricultural methods and policies are not the invention of any one country, but represent the contributions of many nations. Higher education and research should become familiar with agricultural policy and practice in the different countries, and by study and experiment should try to discover what elements of them would add to the value of Indian agriculture. A brief reference to some of the main contributions of several countries will indicate the grounds to be covered by agricultural research and inquiry in contributing to the development of such policy.

England made an early contribution to agriculture in the enclosure laws, though these had bad as well as good effects. Formerly English cattle roamed at large as they do commonly in India, and breeding was uncontrolled. When England abandoned common

pasture and put all land under private control and under fences, cattle breeding was controlled, and the average weight of English cattle was doubled.

The Rothamsted Experiment Station was a pioneer in the study of soil and crop conditions. It has been copied around the world until at present the experiment station has become a large element in agricultural improvement. To England, also, we owe our knowledge of the value of phosphate fertilizers.

Germany originated the policy of coordinating agricultural and industrial development. The sugar industry and agriculture united in increasing the sugar content of sugar beets, and the starch industry did the same with potatoes. Some of the most marked progress in Indian agriculture has been by the use of this policy, in the jute, cotton, sugar and other industries. Germany also set an example of careful and thorough research on land policy.

The United States has made several epoch-making contributions to agriculture and to agricultural education. One of these, the Land Grant College System, has been described. Another contribution is large-scale mechanized farming. Another is contract farming, in which an individual or firm owns modern agricultural machinery, and does the ploughing, planting, cultivating or harvesting for a number of land owners, so that they need not buy their own machinery. Also America has highly developed cooperative management of fruit lands. Farmers who own orchards form cooperatives, the staff of which cultivate and fertilize the orchards, spray, pick, pack, sell and ship the fruit.

Denmark has made an agricultural contribution of a different kind. Whereas in some countries farmers rely on the government to organize them and their agricultural affairs, the Danish farmers prefer to do this themselves. There are more agricultural colleges in Denmark with 40,00,000 of people than in all India with 32,00,00,000 of people, all but one or two of them being privately owned by small groups. The government makes grants to them but does not control or direct them. The entire rural and agricultural policy of Denmark has been for the peasant to manage his own affairs by cooperative effort, accepting government grants, but not government control. Another striking policy has been that of beginning with general cultural development through " People's Colleges " which also are privately owned and managed. By these policies rural Denmark in a century has been raised from a condition of poverty and ignorance to about the highest social, educational and economic level of any country in Europe. A description of the Danish People's College and of

the many ways in which Danish farmers help themselves is given in Appendix P.

Russia has developed the collective farm, though aside from farms shown to visitors, full information is not available. However a few collective farms in India, developed from waste land, would provide opportunity for the study of this method.

Mexico to some degree has followed Russia in developing numerous collective farms called Ejedos. These may not have succeeded too well, but studies of important failures also may be profitable.

Palestine also has developed collective farm colonies called Kvutzas. These seem to be succeeding, though perhaps partly because of heavy private subsidies from America to the Zionist movement.

Japan has made a contribution by showing how the surplus population and the surplus time of agricultural communities can be made productive through small industries, and also how the products of the sea can be made to supplement the national food supply.

New Zealand also has developed distinctive agricultural policies.

These and other countries have developed agricultural policies from which India can learn. The broadest possible basis of judgment should be brought to bear on the issue.

11. *The Need for Agricultural Statesmanship.*—Here we have one of the requirements of agricultural education. There should be men so saturated with first hand contact with Indian agriculture that they know it through and through in its most intimate make-up and elements. Then these same men should be so thoroughly familiar with agricultural policies and their workings, not in some one or two countries, but in every country which has made major contributions to agricultural policy, or which has developed a distinctive farm culture of its own, that they develop sound judgment of relative values and appropriateness, not only of the leading over-all agricultural policies of different countries, but also of their detailed elements.

Of course, no one man can safely be left to cover all this ground. The Indian Council of Agricultural Research, or some such body, might well be the focus of the work of a staff concerned with over-all agricultural policy. The government should aim to make it possible for qualified research students to study at first hand these various agricultural policies and systems.

The kind of competence to be sought for is illustrated by the work of Max Sering of Germany. His scientific investigations into conditions determining the best size of farms provide a classic example of what competent research can do for the evolution of agricultural policy.

India has many men who have the natural competence for a high quality of research. The type of preparation necessary for such service in defining agricultural policy is illustrated by Gandhiji. No man in India was more thoroughly and intimately acquainted with our rural life ; yet he saw it in relation to the whole life and destiny of India, and in some degree in relation to the life of the world.

Out of such studies, with research and experiment at home, a national agricultural policy should gradually emerge. It should be a synthesis of the traditional agricultural skill and wisdom of India and of the best and most appropriate of the agricultural skills, methods and policies which the world has to offer.

12. *The Need for Training Facilities for Leadership.*—It is doubtful whether any institution in India is now equipped to provide such training. Agricultural education should be planned to fill that need. The basic rural elementary schools, rural secondary schools and rural universities, outlined in the chapter on Rural Universities, might well supply the necessary background of intimate rural acquaintance, and the basic training. They and other universities should develop post-graduate facilities for training specialists in agricultural policy, agricultural economics and agricultural statesmanship as has been noted. At present some limited facilities for post-graduate study in agriculture exist at the universities and research institutes.

It would seem desirable to have at least one institution in which thorough-going advanced training would be given in these over-all aspects of agriculture. If the first personnel for such an institution should be assembled from other countries it should include, if possible, representatives from all countries that have made significant contributions to agricultural policy.

13. *The Pressure of Emergency.*—A few comments may be appropriate as to the urgent need for such over-all agricultural economists and statesmen. Our country has immediate and emergent need for more food for our rapidly increasing population. About fifteen years ago Sir John Megaw, then a high medical authority under the Government of India, with the help of 600 doctors in all parts of the country, made a study of food conditions. He found 40% of the entire population poorly fed, and 20% very badly nourished.

For India to feed herself is a prime necessity for maintaining national stability. The day has probably passed when a few million people can starve to death without a resulting political upheaval. With such an extremely narrow margin of subsistence, false steps or mistaken policies may be disastrous. India faces the bitter necessity for quickly solving an inherently difficult problem, and at a time when problems are pressing from all directions.

14. *Emergency Solutions may be Dangerous.*—It is conceivable that India might, for instance, undertake a five or ten year plan for building tractor factories and synthetic fuel plants, and then might turn the Gangetic plain into a number of huge farms, operated by machine power. Such suggestions have been made to us. With centralized administration it might be possible to get somewhat larger yields with a small fraction of the labour force. Those released could be put to work building additional irrigation works to water more land.

For such a programme to be quickly successful it may be necessary to give up personal freedom of action and to accept the destruction of ancient customs and ways of life, and to adopt a totalitarianism. Regimentation would be far more necessary in a densely populated land like ours than in a new country with vast areas awaiting development.

The adoption of such a programme would largely determine the type of agricultural education needed. Education for benevolent regimentation would be in order.

India has also other needs than food. The new India has committed herself to the upholding of human freedom, to the recognition of individual worth, and to the nurture of human dignity and self respect. *The food problem of India must be solved by means which are in harmony with the fundamental principles of freedom, democracy, equality and fraternity, which are the foundation stones on which the structure of the new Indian society is being built.*

But if this better way is taken it must be better for the whole people. The underprivileged should not be in a position to say, " You, the favoured ones, study the situation while we starve ". The people must feel that they are understood and that the situation is being competently dealt with. From many sources we get the impression that, despite shrewdness and evasion developed in an effort to hold his own against his exploiters, the character of the Indian villager is generally sound. There, perhaps more than anywhere else, is the material for the regeneration of Indian life, provided it has a reasonable amount of such leadership as was initiated by Gandhiji.

Thus the initial issue in solving the food problem combines economic issues with those which are social, moral, spiritual and political. No mere agricultural technician will meet that need. Agricultural statesmanship is necessary, and the training should be commensurate with the issues.

15. *Immediate Research Objectives.*—If there are quick methods which will quickly assure adequate food resources they should certainly be discovered and most vigorously applied. However, before far-reaching plans for an agricultural programme are adopted they should have most competent and careful scrutiny. If, in fact, the only road of real feasibility is a long and laborious one, it is the part of wisdom to recognize that fact, and to prepare to take that road. In actual fact, it will be found that some elements of a policy to meet emergency needs will certainly harmonize with any sound long-range policy. Therefore, the insistence that long-range policy shall accord with sound political ideals need by no means to result in inaction. But it does require that the whole results of a proposed programme be taken into account. Improvising or imitation is dangerous.

The following are some fields of research which might give quick returns:

Incentive to Produce.—From many sources we get the opinion that discouragement over the proportion of his production taken from him tends to destroy the incentive of the farmer to produce all that he can. This is not solely an Indian problem. Research as to the ways in which full incentive has been achieved in other countries might be productive. Certain periods of European history have been marked by exceptional incentive to production. Recently production in Western Germany was remarkably stimulated by a change in fiscal policy. Full incentive to production might meet India's food needs.

Farm Credit.—It appears that there is much loss of production because farmers do not have credit for purchase of seed and farm equipment. Present credit arrangements are not satisfactory, and the elimination of zemindars may temporarily disturb credit arrangements. Similar research in this field might be very productive.

Spread of Good Farm Practices.—In nearly every country research discovers better varieties or better methods faster than they are accepted by the farmers. Agricultural research and experiment may find ways to increase greatly the speed with which improvements are adopted. For instance, in the T.V.A. in America, one or two of the better farmers in each village were given free seed and fertilizer on condition that they would use them as directed and would show their farms to their neighbours. In this way as much progress was made in ten years as might have been made in twenty-five years by the ordinary spread of new ideas.

Grain Spoilage.—The spoilage of grain through poor handling and excess moisture is such that if it were greatly reduced the food

deficit would be much less. This also should be a subject for research.

Through these and similar methods production may be quickly achieved while long time plans are being developed.

IV.—Proposals for Agricultural Higher Education.

16. *A Pattern for Agricultural Education.*—Only a very large expansion of facilities for agricultural education will meet the national need. For such expansion, so far as new institutions are concerned, the programme of rural high schools and universities, described in a later chapter of this report, would be directly suitable. Education in a rural setting, with part-time rural work for students, will tend to adjust the students to rural life and to correct the present condition in which not one agricultural graduate in twenty returns to the village and to agriculture.

The system of agricultural education in the country will have to keep three definite objectives in view.

1. The training of farmers' sons who will go back to their farms and work on them more efficiently.

2. The training of a variety of persons for the important task of carrying the results of modern agricultural research to the peasant, persons who will be engaged in the work of agricultural education, extension and demonstration in different capacities and may be employed for this purpose by the state or by private agencies.

It has been estimated that the Central Government and the provincial governments will, in the course of the next decade, require for their programmes of agricultural development about 20,000 field assistants for agriculture ; 20,000 stockmen for animal husbandry ; 10,000 non-graduate assistants for agriculture ; 1,500 graduate assistants for agriculture ; 4,000 inspectors for animal husbandry (graduates of the rank of veterinary hospital surgeons) ; 300 gazetted officers for agriculture ; and 550 gazetted officers for animal husbandry.

3. The training of persons for the important task of carrying on the work of research, developmental and fundamental, relating to problems of agriculture and animal husbandry.

The first of these tasks will be taken up mainly by our basic and post-basic schools. Schools with agriculture as the basic craft should be established in large numbers.

The training of the field assistants can be undertaken by the Farm Institutes situated on model farms, and perhaps associated with resident rural high schools. They should require completed basic education as the minimum qualification for admission to a one-year course.

The non-graduate assistants should be trained at agricultural schools (of which there are only nineteen in the country), and at resident rural high schools (agricultural high schools) which may be established according to the proposals of the Central Advisory Board of Education in their scheme of postwar educational development. They should involve a total schooling of twelve years as we have recommended for all higher secondary education.

The graduate assistants should get their education and training at the agricultural colleges and the rural and other universities. The course of study should be of three years duration in the case of agriculture, and four years in the case of animal husbandry, after the completion of twelve years of schooling, and should lead to the degree of B.Sc. (Ag.)

Many more such colleges and university departments or faculties of agriculture should be established if our pressing needs in the matter of trained personnel are to be met. Provision should be made at these colleges and universities for a two-year course after the B. Ag. leading to the master's degree as well as for the doctorate which should be awarded on research in some special field of work not less than two years after the M. Ag.

Especially in agriculture, the highest capacity for usefulness may not coincide with the longest period of academic training. In the past, bookishness has greatly limited the value of agricultural education. There should be no hierarchy of advancement based on degrees. Actual ability should be recognized and given opportunity, regardless of how that ability has been achieved.

17. *Aims of the first Degree Course.*—The aim of the first degree course in agriculture should, in our opinion, be to give students a broad general education with agriculture as the basis, to train them for actual farm management, to prepare them for rural leadership and to furnish the requisite background and foundation for research or teaching.

18. *The Curriculum.*—The curriculum should be devised with these objectives in view and dealt with in courses outlined and arranged to give the desired material in its proper place. It will then consist of four main elements :—

(1) General Education.

(2) Basic Sciences.

(3) Agriculture and Animal Husbandry.

(4) Practical work.

We have already discussed General Education in Chapter V of this report. The basic sciences will include chemistry, physics, botany, zoology and geology. Economics and rural sociology are also assuming the place of sciences basic to agriculture as a social enterprise. As only a little less than half of the time at an agricultural college will be devoted to these two elements of the curriculum it is essential that a high standard of work in these should be aimed at. The university faculties of agriculture, besides the general advantage of providing a liberating academic atmosphere of service and research, also provide the specific benefit of co-operation from their arts and science faculties with regard to efficient courses in these fields. It is necessary, however, that the teachers should be fully conscious of the relationships of these subjects to the applied courses in agriculture. The student should get a clear vision of the relationship between agriculture and the basic sciences, between agriculture and the rest of the country's economic life, and between the rural and urban elements of society.

19. *Flexibility of the Curriculum.*—In order to make the curriculum flexible, in order, that is, to make it possible for the student to get a general over-all view of the essentials and to go into greater detail with regard to some particular branch for which he has special aptitude or use, it is necessary to divide the various elements of the curriculum into courses requiring, say, 20 to 25 hours of teaching every half year. Some subjects will be covered by one course, some by more than one. It may be made possible for a student to take at least one course in a number of subjects and more than one in his field of specialisation.

We give in Appendix E a short account of how the curriculum for a degree in agriculture is devised and distributed at one American University.

20. *Considerations in the Design and Revision of Curricula.*—If our older colleges are not to fall in a rut, and if our new ones, many of which, we hope, will soon come into existence, are not to begin in the traditional way, we would suggest that the problems of training and of the curriculum in our agricultural colleges should be made the subject of special study and periodical review. This can be fruitfully guided among other things by (1) a comparative study of the methods of education and the curricula in the countries which have shown significant progress in agriculture ; (2) by an analysis of the occupations of the agricultural graduates and former students of our own agricultural colleges ; (3) by a discussion of the specific objectives of agricultural education and their relative importance ; (4) by an analysis of the element of the basic sciences essential to an

understanding of the technical courses ; (5) by an analysis of the requirements of the agricultural industries in the country; and (6) by an enquiry into the causes of failure in agricultural vocation.

21. *Practical Work.*—In our schemes of agricultural education we should never allow ourselves to forget that agriculture is an occupation to be practised. The practical aspect of agricultural training should never be allowed to become secondary. In order to make this training real laboratory work is not enough. Field trips and travel courses must be arranged so that students have an opportunity to visit various commercial enterprises throughout the country. Visits to farms, groves, processing plants, markets, fertilizer factories, and cattle shows can be of great use and should be systematically encouraged. Students may be required during their period of study to do practical work under competent supervision in any recognised agricultural or related pursuit and render a satisfactory written report of honest work.

22. *Three Functions of an Agricultural College.*—A full fledged college of agriculture should, in our opinion, be able to make provision not only for instruction and practical training, but also for research and extension work. It should endeavour to establish itself as the leader in progressive agricultural practice of the surrounding country side. It should apply itself to the problems of the immediate neighbourhood and attempt, by its own extension work, to carry the results of its investigations to the peasantry around. This alone can make the instructional and research sides of its activity more realistic and fruitful than they generally tend to be.

23. *The Place of Government and of Local Initiative.*—In our discussion of university government we have indicated the desirability of the autonomy of university administration. Government should assist with funds and should provide general discipline and oversight, as through the University Grants Commission. Otherwise freedom of action and local initiative should be respected. This general principle has far wider application than the university field. It is a sound principle for a large part of group undertakings. Nevertheless, the central and provincial governments have a large place in agricultural education. Most research must be government undertaking. The experimental farms should be in the same class. A wide range of advisory, educational and supervisory services can only be supplied by government. Many large development projects can have no other chance. Government initiative and private group initiative in the long run should leave no unoccupied area between them. Except for time for initial development, what one leaves undone should be done by the other. But it is in the

interest of sound human relations and democratic government to encourage local and group initiative and to confine bureaucratic government to the smallest necessary limits.

24. *Education for Functions Associated with Agriculture.*—Raising crops is only a part of agriculture. They must be packed, shipped and sold. A wide range of activities radiates from the farm. It is found in practice that the more of these processes the farmer has under his control, the less he will need to pay to " middle men ". In the discussion of agricultural education it should be assumed that these related activities are included. From basic school to post-university research, problems of packing, selling, transporting, grading and financing should be included. In this, agricultural education and business education have much in common.

25. *Fisheries.*—Because fish and other ocean products supply food and fertilizer, as well as other products, and because fisheries have commonly been attached to agriculture in public administration, it is appropriate to comment on education and research with reference to ocean products. Fish have been a very large factor in the food supply of Japan, though the technology of using the ocean as a resource for food, fertilizer and other products is in its infancy even there. The fertility of the land finally reaches the ocean and is lost. Parts of the ocean are densely occupied by plant and animal life. It has been suggested by oceanographers that possibly the quickest way for India to meet her food deficit would be to exploit the ocean. Careful consideration should be given to this possibility, and to the wisdom of an extensive research programme for the exploration of ocean resources.

Rural basic education in the fishing communities around the coast might have fishing as the co-ordinating theme in education, as some other basic schools have used spinning and weaving. Net making and mending and the making and management of small craft would be as educational as spinning and weaving. Secondary schools would have varied activities in the same field. One rural university might specialize in ocean and fisheries interests. There would seem to be no reason why India should not do as well as Japan in making the ocean yield food and other resources, but before that can occur on a large scale, a foundation must be laid in education and research.

26. *Co-ordination of Agricultural Services through Education.*—The Agricultural Education Committee forecasts the need for more than 50,000 field workers in agriculture and animal husbandry. Health and commerce might require as many more, not to speak of

similar staff for a rural credit organization, educational supervisors, fisheries along the coast, industrial relations inspectors, and various others. To the extent that such services are undertaken by the interested persons on their own initiative, as is the case in Denmark, no official action will be needed. Otherwise there should be co-ordination between these various services, or the villager will be confused by competing or overlapping agencies. As points of co-ordination for these varied services, the rural residence secondary schools and the rural universities, proposed in the Chapter on Rural Universities, would be desirable. Perhaps the Ministry of Education should be the co-ordinating agency to integrate and harmonize the work and administration of all these officials and field workers.

V.—Reccmmendations.

27. Nearly three quarters of our people are engaged in agriculture. In the past this part of our population has been too heavily burdened by taxation and by other exactions, and has received too small a share of the national income. As a result rural India as a whole is in deep poverty and illiteracy. The national supply of food and fabric, which depends upon agriculture, is precariously insufficient. Education to promote the interests of agriculture is extremely inadequate.

Over-all philosophy and policy for agriculture have not clearly emerged. Suitable provision for training men and women for leadership in the development of such philosophy and policy have not been made in India.

In view of these conditions, we recommend :

1. that agricultural education be recognized as a major national issue ;
2. that, since in a democratic country sound agricultural policy must rest on the understanding and participation of those engaged in agriculture, the study of agriculture in primary, secondary and higher education be given high priority in national economic planning ;
3. That, so far as is feasible, agricultural education, agricultural research, and the formulation of agricultural policy, shall be in the hands of persons and groups or associations of persons, who by intimate association, participation and experience, have first hand, penetrating knowledge of agricultural life ;

4. that, so far as is feasible, agricultural education be given a rural setting, so that it shall include direct participation in and experience with agricultural life and practice ;

5. that present agricultural colleges be strengthened in equipment and in teaching staff, and that each one, in addition to a programme of well proportioned general and agricultural education, endeavour to find some phase of agricultural practice, or some related interest such as agricultural credit or agricultural co-operatives, in which it shall undertake to achieve mastery ;

6. that new agricultural colleges, where possible, be associated with new rural universities so that agricultural education may be supported and enriched by contact with other fields, and by common use of personnel and equipment ; and that each such new agricultural college also explore for some phase of agriculture or related interest, often particularly related to its locality, in which it will strive to become an outstanding authority ;

7. that a widespread series of experimental farms be developed by the central and provincial governments as resources and adequately trained men become available ; these experiment stations to represent all major types of soil, climate, crops and topography. (The system of experiment stations in the U. S. A. and the Rothamsted Station in England, are good types) ; that as nearly as possible every basic elementary school, every rural secondary school and every rural university, should have its own small experimental farm, so that the spirit of research and experiment shall pervade all rural life, and that where practicable every experiment station or experiment farm be located in association with a school or college where students on work and study programmes may provide labour, while becoming acquainted with experimental and research methods ;

8. that the existing agricultural research laboratories be supported and expanded to the full extent that the quality of their work justifies ;

9. that new post-university research centres be established as university research centres ;

10. that the Indian Council of Agricultural Research continue to be supported and developed as a clearing house and co-ordinating agency for all advanced agricultural research centres, as a source of publications, and as a source for publicizing the valuable results of research by visual education, radio, bulletins, library loans, micro-film service, and by other means ;

11. that an Institute of Agricultural Policy be established probably under the Council of Agricultural Research, for research and study toward the clarification of over-all, long-time agricultural policy for India, in accord with the fundamental aims of the Indian constitution, and that consideration be given to the feasibility of assembling an international staff of qualified men for that purpose ;

12. that an agricultural education and research panel, attached to the University Grants Commission, along the lines proposed in this report for engineering education and research, be established for apportioning available resources for agricultural education and research ;

13. that the University Grants Commission, in association with the Indian Council of Agricultural Research, make an inquiry into the merits of public policy involved in the levy of cess taxes on specific commodities, such as cotton, sugar, jute, lac, and cocoanuts, as a source of research and educational funds ; as compared with the policy of block grants from public appropriations, to be apportioned by the University Grants Commission ; and

14. that since fisheries, like agriculture, deal with food and fertilizer supply, and since they have been historically associated with agriculture in administration, a careful inquiry be made as to the wisdom of rapidly developed and far-ranging research on ocean resources as a possible means for rapidly and greatly adding to the nation's food and fertilizer supply.

B.—COMMERCE.

1. Beginnings of Commerce Studies in Calcutta. 2. The Establishment of other Colleges : Courses of Studies. 3. The Objective of these Courses. 4. Practical Training after Graduation. 5. Practical training before Graduation. 6. Post-Graduate Work. 7. Recommendations.

1. *Beginnings of Commerce Studies in Calcutta.*—The beginnings of commercial studies in India are to be traced to a class which was started at the Calcutta Presidency College in 1903 and which later developed into the Government Commercial Institute in Calcutta. The Calcutta University Commission described its activities as they were in 1918.

It provided whole-time instruction in day classes for students who joined at something like the secondary school-leaving stage and were put through a curriculum which extended over two years and included as compulsory subjects English with special reference to commercial correspondence, letter-drafting and precis writing, Arithmetic, including commercial and mental Arithmetic, and an Indian vernacular, with Shorthand, Typewriting and Book-keeping as optional subjects. There were arrangements for evening classes as well, classes in Banking and Accountancy and Book-keeping, Mercantile Law and Insurance, Shorthand and Typewriting.

2. *The Establishment of other Colleges: Courses of Studies.*—In Bombay commercial studies originated with the establishment of the Sydenham College of Commerce and Economics in 1914. Commerce classes were started in other universities within the last 30 years and now almost every Indian university has either a Faculty or a Department of Commerce. In most of the provinces the student who wishes later to take up a Degree in Commerce starts specialising in it from the intermediate class. He takes up courses in Elementary Banking and Accountancy, in general commercial knowledge, in Shorthand and Typewriting and thus equips himself for his studies for the Degree. The Degree course has in addition to papers in English some modicum of theoretical Economics including Money and Exchange. But the main part of the course is devoted to subjects like Business Organisation, Secretarial Practice, Commercial Geography, Commercial Statistics and Mercantile Law. For his final year he has a special subject which is generally Accountancy or Banking or Transport. In some universities the course includes Actuarial Science and the organisation of special Industries. The Andhra and Delhi Universities offer an honours course in commerce extending over 3 years and require a more comprehensive study of some of the subjects mentioned above. Other universities like Bombay,

Allahabad, Lucknow and Agra have a Master's Degree in Commerce. The courses for this include specialized study of industries and agriculture, and of markets and corporations in addition to a thesis which is allowed in some universities.

3. *The Objective of these Courses.*—The objective of these courses is not clear. Does the university offer a training for some special profession like Accountancy or Banking or Insurance, or is it turning out graduates proficient in the general principles of business organisation who can take their place in Secretarial or Junior Administrative posts in commercial concerns ? If it is the latter then we have to see in what respects the Commerce graduate is better equipped than an Arts graduate who has taken a degree with Economics, Statistics and allied subjects for the work he will be called upon to do. A number of young men first take a Commerce Degree and then go through the M.A. course in Economics, claiming to have thereby equipped themselves for business administration better than the pure Arts or Commerce graduate. Some again take a Law Degree after training in Commerce and feel that they can do better than other Law Graduates in coping with cases of Mercantile and Company Law on account of their equipment for the first Degree. But those who complete their education in Commerce and have the intensive training which the Master's Degree offers are led to seek posts either as teachers in educational institutions or in the executive of business houses. The opinion of practical businessmen on the ability of these university graduates to fit into business is not favourable. They criticise the training received in universities as almost purely theoretical and they find that they have to train the Commerce graduate in the ways of the business just in the same way as they have to train an Arts or a Science graduate ; some of them even observe that the latter is often easier to train on account of his superior intellectual equipment. These criticisms lead one to enquire if we should not seek to supplement the theoretical training in commercial subjects with practical training in a business concern. In most universities the college classes occupy the major part of the day and the student has no facilities for practical work even in his special subject like Accountancy, Banking or Transport. Even if it be possible to arrange the classes in the morning or in the evening, opportunity for practical training would be hard to find. Banks and other business organisations do not generally take apprentices from the universities who have no serious responsibilities in the concern.

4. *Practical Training after Graduation.*—One way of remedying this state is to take the B. Com. Degree as a preliminary qualification to the profession of an accountant or of a senior assistant in a bank-

ing concern or in an insurance office. After taking his degree in Commerce the student should be articled as an apprentice either in an accountant's firm or in a banking concern or with an insurance company to learn the ways of practical business. He has to be as much of a student here as he was in the university and he may have to pay a fairly heavy fee to receive the benefits of this training. On the completion of this training he will be adequately equipped for professional work. This suggestion implies that the Commerce training which our universities give is not a professional one but it is pre-professional education which makes the student conversant with the general lines of many kinds of business : it is for him to choose his profession after he has received this preliminary education. Arts or Science graduates are not prevented by law from going into these professions, but the firm of Accountancy or the manager of a bank will probably prefer the Commerce graduate as better prepared for receiving the practical training than the former. The profession of Accountancy now requires intensive training with a Registered Accountant for some years, and similar training should be necessary for banking or secretarial work, though the period need not be as long as for Accountancy.

5. *Practical Training before Graduation.*—But what will be the case of a student who does not wish to specialise and is content with being equipped for a post in any business concern? A Commerce graduate is not always considered by businessmen as better equipped for his work than other graduates. If we are to equip him better we must make some provision for practical work side by side with the education he receives at the university. It will not be intensive but it will familiarise the student with the ways of work in particular professions. He may be working with three or four different kinds of firms spending a few months with each one of them. The university classes will have to be arranged in such a way that the student has almost full-time training in the firm for this period and he can also use his vacation for some training. A closer co-operation between the universities and commercial concerns is necessary if we are to give adequate facilities for this kind of training. A programme of alternating work and study, as described above, will be especially effective in uniting formal education with practical experience.

6. *Post-graduate Work.*—Very few students should be encouraged to proceed to the Master's Degree in Commerce. This training is at present mainly intended to fit one for a teaching post in a college or a university. The specialised study referred to above is based almost entirely on book knowledge. Investigations for the thesis

which is obligatory for the Master's Degree in some universities may have to be carried out in an industrial firm or in agriculture or commerce ; but even here the collection of facts is not always based on first hand experience : it is borrowed from Government blue books and statistical records. Hence doubts have been expressed as to the utility of such an investigation and some universities have confined their courses for the Master's Degree to an intensive study of special subjects. It is obvious however that if commercial courses are to be regarded as professional training, they cannot be dissociated from practical work. Not only are the students to be offered these facilities but some condition may have to be imposed about their ineligibility for the first Degree without evidence of satisfactory practical work. It is only by insisting on such a condition that we can escape the charge which is frequently levelled against our Commerce Faculties, that they prepare graduates fit to be teachers of Commerce or clerks of the same type as Bachelors of Arts.

7. *Recommendations.*—We recommend :—

(1) that during the period of his study at the university, a Commerce student should be given opportunities for practical work in three or four different kinds of firms ;

(2) that after graduation some of them be advised to specialise in a particular profession like Accountancy and receive the requisite practical training ;

(3) that the training for the Master's Degree in Commerce be less bookish and confined to a comparatively small number.

C.—EDUCATION.

1. The Training Colleges. 2. Courses. 3. Numbers. 4. Education as a Branch of University Study. 5. Criticism of the Existing Courses and Teaching : (a) School Practice, (b) Experience of the Staff, (c) The Courses in Theory. 6. Research in Education : (a) The Master's Degree. (b) Original Work by Professors and Lecturers. 7. Recommendations.

1. *The Training Colleges.*—People in this country have been slow to recognise that Education is a profession for which intensive preparation is necessary as it is in any other profession. The first training institutions to be started were all financed and managed by the Government. In Madras the Government Normal School was established in 1856 and its name was changed into that of Teachers' College in January 1886. A Secondary Training College in Bombay was founded in 1906 and prepared secondary teachers for its own diploma, known as " S. T. C. D.", until it was affiliated to the University in 1922 for Teaching courses leading to the B. T. degree. The David Hare Training College, Calcutta, was opened in July 1908, in the building which was at one time occupied by the Albert College. It is now housed on a spacious site in the southern part of the city and trains students for the B. T. degree of the University. There are Government Colleges at Patna and Allahabad, the latter giving its own diplomas, while Nagpur, Banaras, Aligarh and Lucknow have University Training Colleges. All these institutions are for the training of graduates who get the diploma or the degree after training for one academic year.

2. *Courses.*—There is not much of variation between the courses prescribed in the different institutions and generally they have compulsory papers on the Principles (or Theory) of Education, Methods of Teaching, History of Education, School Management and Hygiene, provision being also made for practical teaching (Criticism lessons and Demonstration lessons). In addition to the compulsory courses students generally specialise in the methods of teaching one or more of a number of optional subjects. Students have to pass in the written papers and the practical examination separately. While the training for the written papers follows more or less the same lines in all universities, there is some variation about the practical work. Some universities insist on 60 supervised lessons before the candidates are eligible to appear ; others may not insist on more than 10. There are differences again as regards the care taken with the supervision and criticism of the lessons. There are difficulties about the choice of the schools where the practical lessons have to be conducted. The older institutions like the Teachers' College, Madras, or the David Hare Training College or the Secon.

dary Training College, Bombay, have their own practising schools, but the Principal of the last named Institution mentioned that the Elphinstone Technical School (the official demonstration school) was becoming more and more technical every year. So it has been found necessary to farm out a large majority of the students to several City schools. This has resulted in a less efficient training of the student-teachers and a vertical division between lecture and lesson days.

3. *Numbers.*—Madras has more than one training college in the city, while there are several others outside. The Government College at Saidapet (The Teachers' College) admits about 140 students to the B. T. class, the Meston Training College has about 70 and the St. Christopher's Training College where all the students are women has about 45 students. The annual intake for B. T. of the Secondary Training College, Bombay, is about 90 and that for the David Hare Training College about 120. During the last 2 or 3 years the necessity of training more teachers has been recognised in all quarters and private colleges have been encouraged to open training classes. We cannot yet assess the quality of the training imparted at these new institutions but we can say that they are following the same pattern as the older institutions. The chart which we attach[1] will show that the number of applicants at the older institutions in proportion to the seats has gone down and this is explained not so much by the starting of the new institutions as by the fact that the profession of teaching has come to be even less prized than before. This is not the place to speak about the emoluments of the teachers in Secondary schools but one has to note that the salaries are such as to attract only those who have failed to enter any other profession. As during the War period and for a year or two following it, the field of employment for graduates was extended, there were fewer people for the profession of teaching. The choice of students in these colleges has been made from two categories : (*i*) from those who are already teachers in schools and (ii) from fresh students. In some universities we were told that the " freshers " fare better than the experienced people because they have generally higher qualifications. As a teacher in a training college put it : " these fresh men are generally first or second class graduates, the others are made up of those who have entered this profession after futile hunting for other jobs ".

We were not able to make an exhaustive survey of all training courses for graduates offered by universities or by training colleges, Government or private, throughout India. But we saw a representative sample of them. From what we saw it is plain that they

[1] Appendix F

vary very greatly in efficiency from one university to another. The best of them succeed in interesting their students, in giving them a blend of school practice under satisfactory conditions and of intellectual content adequate to make the students think about both the problems they confront in school practice and the wider philosophic and sociological implications of their profession. In the worst of them the school practice was completely insufficient and defective, while the theory was vague and unrelated to actual conditions.

4. *Education as a Branch of University Study.*—Education as a study at university level is peculiar in this respect, that in whichever direction it is studied to an advanced level, the study tends to become something other than Education, *e.g.* it turns into a study of Philosophy or Psychology or History or Sociology. While this fact makes it easy for the pedantically minded to deny that Education is a real subject, it remains true that Education is an essential focal point for the various studies and skills necessary for the tending teachers. It is also true and important, but by no means always grasped in Indian training departments and training colleges, that those responsible for training teachers must themselves look at the whole course from this focal point, *i.e.* the place of the school in the nation's life and the right training of children in the school. If this outlook is lacking the course will become distorted, even if the separate elements in the course are taught by quite learned and competent Philosophers, Psychologists, Historians and Sociologists. For if they are not continually aware of the professional needs of their students, their students will rightly feel that there is no unity in the course and that different specialists are simply trying to drag them in different directions, and this in a course whose length is all too short for what must find a place therein. Such specialist lecturers will also, unless they are "Education-minded", tend to regret the fact that they are "only" teaching Education students and will all the time be wishing that they were instead teaching "straight" History or Psychology or whatever their special subject may be.

A second peculiarity of Education as a university study, though this it shares with several other professional courses, is that it cannot possibly consist of theoretical instruction alone. Theory and practice must go hand in hand and each must support and throw light upon the other. In the ideal training course something like equal amounts of time and equal weight in assessing the student's result should be given to theory and to practice. On the one hand, nobody has ever yet been lectured into becoming a good teacher, nor even read himself into becoming a good teacher. On the other hand, if skill in practice were the sole aim, there would be no need for a course in theory, and

a year's practical apprenticeship in a school could take the place of the existing training courses ; but this is far from the truth, and unguided practice, or the unintelligent following of rule-of-thumb methods may do the beginner more harm than good, and is all the more likely to make him close his eyes permanently to all the truly satisfying elements in teaching as a worth-while and life-long vocation. It may well be that a young teacher whose initial training had been wholly practical would be of greater immediate use to a school than one who had taken a full course in Education. But the latter ought both rapidly to overhaul the former in the continued acquisition of skill, and also to be far less likely to sink into a routine and subsequently into discontent with the groove in which he finds himself.

5. *Criticism of the Existing Courses and Teaching—(a) School Practice.*—Our main criticism of the existing courses (but we repeat that it does not apply to them all) is that too little time is given to school practice, too little weight is given to practice in assessing the student's performance, and conditions of school practice are often unsatisfactory, sometimes quite grossly unsatisfactory. In some places a student is required to give only five lessons during the whole of his course! We ascertained that in fact students were never failed on their practical test, and we enquired what happened if his five lessons were not deemed satisfactory. We were told that in that case the student gave another lesson, or even another, till he gave one that passed muster! It is not surprising that under these conditions the schools do not regard the possession of the B. T. Degree as the slightest real guarantee that its holder can either teach or contol a class. We consider that in a year's course not less than twelve weeks should be spent by the student in supervised school practice. This does not mean that the supervisor should be present throughout the twelve weeks. Far from it. The student can only find his feet when he is left, from time to time, to his own unaided efforts.

We were told that it would be difficult to increase the amount of school practice because it would mean using more schools, and that schools did not like being used for practice. This did not convince us. In the first place, a training department has no right to admit a number of students greater than can be given proper school practice facilities. In the second place it is not at all a difficult matter, and some Indian training departments have fully achieved it to make schools realise that students coming in to practise—not of course in overwhelming numbers—are a real asset. Almost all schools suffer from excessive routine, and the infusion of a little temporary new blood from time to time in the form of students practising is good for all parties concerned, not merely the students but the

teachers and the children. This is a commonplace in America and Great Britain, and if universities in India cannot prevail upon sufficient schools to find it out for themselves, Government must come to the help of universities and make it a condition of aid, or even recognition, to suitable schools that they shall play their proper part in the practical training of the recruits whose services they subsequently intend to use. As it is, we came across such an absurdity, to take an extreme case, as the whole practical training, so called, for more than a hundred students being given in the one demonstration school attached to the college. This is perhaps twenty times as heavy a load as any single school should be asked to carry ; and under these conditions, what we have just said about students being an asset to a school becomes reversed. It is hard to see how a school can survive such a mass introduction of students.

When discussing this shortage of schools for practice we found a tendency to argue that a school could only be used when the college supervisor could dictate either the whole curriculum or at least the content of lessons to be given by the student. This is utterly wrong. It is good for students, and even good for their college supervisors, to have to fall in with the current practice of a school and make the best of it. Here again there are limiting cases, no doubt ; and the training department should have sufficient choice in the schools it uses to prevent it from having to use a school whose methods or tone were quite intolerably bad.

(*b*) *Experience of the Staff.*—Our second criticism (and again it is not to be applied to all places) is this. The career of a school teacher in India is certainly not well-paid. Even if graduates tend to choose it as a last resort among professions, they can still be led by skilful handling of their training course to realise that it can be, as has been well said, " though the worst paid, yet the most rewarding of professions ". But it is quite impossible for this sense of vocation to be instilled by a staff who have never themselves taught in a school. They need not have many years of school experience, and there is room on the staff of a training department for a few specialists who have not been school teachers. But the bulk of the staff including emphatically the lecturers in Education and in Methods must be able to speak from first-hand experience of school teaching if they are to command the respect of their students, and to have any chance of convincing them that they are entering a noble career. In no respect did we find greater differences between one place and another than in this. In some, all the staff had had school experience. In others, not one of the staff had been a school teacher and, naturally enough in the circumstances, they saw no reason

why they should have had such experience ! It should be a condition of recognition for all training departments and training colleges that not less than a named proportion of the staff should have had school teaching experience ; and the named proportion should be high, at least 50 per cent. If it is argued that, as things are, it is difficult to find school teachers intellectually capable of holding lecturers' posts, the answer must be that nothing would so quickly rectify this state of affairs as the knowledge that you could not hope to be a lecturer or professor in Education unless you had started by teaching in a school.

(c) *The Courses in Theory.*—The content of the theoretical part of the courses needs no particular comment except that in those places where practice is so greatly neglected it is impossible to achieve what should be the aim of courses in Methods, in Psychology, and in Principles of Education, namely that they should be closely linked with what the student is seeing for himself in school during the practical part of his course. There is the further danger in an Education course where theory wholly outweighs practice, that there is less check upon the theorist and that courses in Method may become too specific, too detailed and incidentally too long ; it is a misfortune if the student is led to suppose that there is only one right way of teaching a subject or that there is a perfect syllabus applicable to every school. Theory of Education must be flexible and adaptable to local circumstances if it is to mean anything real to its students. If it is simply something more to be learned by heart from lecture notes and text books, the whole course will do the student more harm than good. It is a fundamental principle nowadays that a real education is not so much a matter of lessons to be learned and memorised as of a life to be lived and purposeful activities to be shared. If this is true of a school it must be equally true of a university and of the training course which a university provides.

6. *Research in Education*—(a) *The Master's Degree.*—There is not much systematic research in Education going on in India today. At a certain number of universities the Degree of Master of Education is conferred upon candidates who either stay on at the university after completing their initial qualification as teachers, generally the B. T. Degree, or who return to it for this purpose after an interval. The requirements for the Master's Degree in Education vary, but normally include a piece of original work prepared under supervision. Besides these first steps by beginners in original work the staffs of some training departments, though by no means all, are seriously engaged in original work. There are also a few centres for advanced work in Education or Educational Psychology, *e.g.* at the Government Centre at Allahabad and at the University of Patna. The

first attempt at educational research at the All-India level is to be made by the newly-founded Central Institute of Education in Delhi.

Little can be said about the work of M. Ed. candidates except that it is a good thing for every university training department to have this task of guiding beginners in the technique of educational research even if the results are necessarily small and scrappy. It is very doubtful if a graduate who passes straight from his Degree to his initial training course and thence straight to work for the M. Ed. without school experience can produce original work of value in the field of Education in the stricter sense, though no doubt he can learn techniques, statistical and other, which will be useful to him as an individual or as a subordinate member of a research team. Normally, however, it would be better for a student to learn more about the practice of education by teaching for a few years before he returned to take the Master's Degree in the subject.

(b) *Original Work by Professors and Lecturers.*—The original work by Professors and Lecturers in Education is sometimes of high quality, but it seems to suffer, so far, from isolation and lack of inter-university planning. The problems confronting Indian education today are so stupendous in their sheer scale, and so complicated in their nature, that the efforts of even the most gifted and persistent individual seem dwarfish in comparison. In these circumstances immense responsibility lies upon the Central Institute, and its progress must be keenly watched, and keenly supported by every well-wisher of India. The practical problems of first magnitude confronting India are too obvious to need more than cursory statement. Here is a vast country, set out on the path of democracy with adult franchise, yet 85 per cent of its people are illiterate. Here too is a would-be democratic country where in fact up till now the selection of young people for higher education, or indeed for any education at all, has been based not upon any kind of test of the child's capacity but simply upon his parents' capacity to pay for schooling. It is going to involve a fundamental change, more profound than is yet realised by the vast majority of Indians, before we can achieve even the beginnings of an educational pyramid, *i.e.* a national structure in which all children get the rudiments of education (and are not thereby unfitted for manual labour), and the choice of who shall proceed further and further up the educational pyramid is based upon capacity and temperament alone. The mere effort needed to construct tests of capacity and temperament for use on a nation-wide scale and flexible enough to be fair as between different social strata and different physical environments will be a most difficult and lengthy task, which has not yet been begun. The Central Institute should enlist the services not only of its own

staff or of its own University of Delhi, but of all would-be students and teachers of Education throughout India. No task in front of India seems to us more urgent than this.

7. *Recommendations.*—We recommend :—

(*i*) that the courses be remodelled and more time given to school practice and more weight given to practice in assessing the students' performances ;

(*ii*) that suitable schools be used for practical training ;

(*iii*) that students be encouraged to fall in with the current practice of a school and make the best of it ;

(*iv*) that the bulk of a staff of the training college be recruited from people who have first hand experience of school teaching ;

(*v*) that the courses on the theory of Education be flexible and adaptable to local circumstances ;

(*vi*) that students be encouraged to proceed to the Master's Degree only after some years of experience of teaching.

(*vii*) that original work by Professors and Lecturers be planned on an all-India basis.

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I.—Engineering Education : its Early Beginnings.

1. *History.*—Engineering education, unlike other types of professional education, has not had a long history. Though the ancients and medievals had built large brick and stone houses, castles, cities and huge temples, had constructed long high ways and aqueducts, and dug canals, which show considerable knowledge of what are now called civil and hydraulic engineering and of properties of building materials, this knowledge must have been derived empirically. Beginnings of mechanical engineering are to be found in the manufacture and use of tools, means of transport, simple machinery like lathes, and weapons of offence and defence. Rudiments of chemical engineering are to be seen in the old metallurgical practices. But there were no organised schools for teaching apprentices the use of machinery or knowledge of processes ; knowledge passed from generation to generation of craftsmen and artificers, by word of mouth, and was thus confined to castes and guilds.[1]

2. *The Industrial Revolution.*—With the advent of the Industrial Age, which was ushered in by the discovery of the steam engine by James Watt about 1780, and the ability to generate and to handle large amounts of power rendered possible by the invention of the steam engine, men passed from dependence on human labour and hand tools to large and complicated machinery ; production of commodities passed from cottage workshops to factories. Transportation by bullock-carts, horse-driven carriages, and wind or man-driven boats, gave way to railroads and steamships. All this necessitated the construction of large machines, engines, ships and carriages, and gave rise to problems of industrial finance and labour.

3. *Early Engineering School in Europe.*—While inventive genius was called upon to devise new kinds of machines and to handle new types of processes, the craftsmen and artisans were called upon to put these designs into actual practice. They were asked to test and handle these machines and to repair them whenever necessary. The engineer was thus evolved from two different streams ; first from the artisans and craftsmen on one side, who belonged to the lower orders of the less specialized society of the last century, and on the other side from the genteel class who had

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[1] Treatises on architecture by Vitruvius in Rome *Manasara*, *Yuktikalpataru* by King Bhoja in India, or on Metallurgy by Agricola may be mentioned. But these treatises were more descriptive than educative.

knowledge of sciences, and had acquired habits of disciplined and organised thinking. Sometimes the two types merged in the same person *i.e.* the craftsman taught himself sciences, and learnt to think and invent, (*e.g.* James Watt) ; or the man with scientific education took to practices with appliances and machinery for a definite objective (*e.g.* Sadi Carnot).

It was soon found that it was not possible to depend upon unlettered mechanics and craftsmen to manufacture, according to designs given to them, the new types of machines which were constantly coming into use, or upon apprentices to handle these machines properly, unless they were instructed in their use. Schools for general education of craftsmen and artisans, and for teaching apprentices the use of machines were founded by John Anderson at Glasgow about 1790, and Dr. Birkbeck in London in 1823. Anderson's university ultimately became The Royal Technical College, Glasgow. Amongst the universities, Cambridge took the lead in admitting engineering to the rank of university education. France started technical education about the same time (1794) when Ecole dés Traveaux Publiques, later Ecole Polytechnique, was founded. In the U. S. A. the first technical school was founded at Bowdoin College, Maine in 1823, but this did not live along. The oldest surviving technical institute in the U. S. A. is the Rensselaer Polytechnic Institute at Troy (New York State), which was founded in 1823, and started giving degrees in civil engineering in 1835. Germany started late, but it built up, after the Franco-Prussian war a chain of technological institutes, (culminating in the Technische Hochschules) which provided for the teaching of all grades of men from craftsmen to researchers, and this was mainly responsible for the great technical and industrial superiority of Germany which was noticed during the first world war. The great Technische Hochschule at Charlottenburg, Berlin was founded in 1879, as part of the university, but was later separated from it for the sake of administrative convenience. The success of this institution led to the foundation of the Imperial College of Science and Technology in London by the amalgamation of a number of smaller institutes in 1907. "By the terms of its Charter the Imperial College stands alone in being specially charged to develop postgraduate studies in their application to industries." (Universities Quarterly, Vol. 2, 1948).

II.—Growth of Engineering Sciences.

4. *The Variety of Courses.*—The nineteenth century has witnessed the birth of many branches of engineering and technology in addition to the classical ones of civil and mechanical.

The range of development in engineering and technology is illustrated by the following lists of separate engineering fields which are recognised and in which four or five years of under-graduate courses leading to a degree are offered in American Universities and Colleges. Within each one of the fields, there are further sub-divisions and specialisations, each being the subject of special post-graduate study and research.

General Engineering

Civil Engineering
- Architectural
- Building and Construction
- Irrigation
- Sanitary
- Railway Civil

Naval Architecture and Marine Engineering

Chemical Engineering
- Ceramics
- Fuel Technology
- Metallurgical
- Mineral Processing
- Petroleum

Mechanical Engineering
- Aeronautical
- Railway Mechanical
- Automotive

Electrical Engineering
- Communication (Line and Radio).
- Railway Electrical

Geological Engineering
- Mining
- Geophysical Prospecting
- Mineral Exploration

Public Health Engineering

Industrial Management

Industrial Engineering

Agricultural Engineering

Technology and engineering are products of fundamental discoveries in basic sciences, and as is well known, these began to accumulate in the late nineteenth and in the twentieth centuries and in greater variety than in all the previous 50 centuries of civilised life. Inventive genius in Europe and America tried to utilise these sciences for new industries, and for other human needs ; Thus new branches of engineering began to grow. To give a few examples :

Electrical engineering which now claims as many as, or more professionals and students than the older branches of civil or mechanical, started actually from the year 1882, when Edison built the first central electric power house to supply electrical power to factories, and light and power for domestic use to dwellers of a city. The discovery of the law of electromagnetic induction was made by

Faraday in 1831, but it required work of a half a century [1] to put the discovery to practical use.

With the multiplication of the number of electrical power houses, and with the long distance transmission of power, the demand for men trained in the use of electrical machinery and acquainted with the fundamentals of the science began to grow, and the universities and technical colleges began to introduce courses in electrical engineering. But only one or two colleges are known to have introduced electrical engineering courses earlier than 1880. So rapid has been the progress in this field that the number of electrical engineers, technicians and craftsmen in the U. S. A. is now estimated to be nearing the million mark. The same is true of automotive engineering which dates from the time of the discovery of the internal combustion engine by Otto in 1870. Rudiments of chemical engineering were known in earlier metallurgical practices, but the great discoveries in organic, physical and inorganic chemistry subsequent to 1880, led to more and more large scale chemical industries. Chemical engineering courses began to be introduced about 1890, almost simultaneously in the German Technische Hochschules and in great American Technical Colleges like the Massachusetts Institute of Technology (M. I. T.). The first courses were introduced in England in the Imperial College of Science and Technology in 1911.

6. *Trends in Engineering Education.*—Finch remarks in his book—' *Trends in Engineering Education* ' :—" Engineering is a constantly developing profession and change and growth are never-ending. It is expanding in power through the development of important techniques, and new and better products, processes and practices, and in scope through ever-widening horizons, new opportunities for greater service, and increased responsibility. Change, continuous and never-ending change and improvement is the normal atmosphere of engineering life and of engineering education."

7. *Varied Development of Electrical Engineering.*—Electrical engineering is a typical example of this change. For about 20 years it dealt mainly with electrical power generation, transmission and utilisation. With Marconi's discovery of wireless telegraphy (1898), electrical engineers began to study and watch the progress of Radio Communication. In some universities and technical colleges, the new science began to be pursued as a subject for post-graduate study and research. Then came the discovery of the use of triode valves in

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[1] This interval between a fundamental discovery and its first large scale use can however be much shortened if finance for applied research on utilisation be forthcoming as in the case of preparation of the Atomic Bomb. In this case, 50 years' work was concentrated into four years.

1914 which revolutionised radio communication, and made broadcasting possible. This led to the need for a large number of engineers trained in the fundamentals of radio communications, and in the use of the necessary appliances. So universities and technical colleges were called upon to open *undergraduate* classes for the training of radio engineers.

Many developments of electrical engineering have emerged, such as power plant and transmission engineering, radio communication, telephone communication, electronics, electrical calculating machines, electric railway engineering, electrical recording apparatus, electricity and electronics in medicine and surgery, electrical control apparatus, servo-mechanisms and many others.

8. *Engineering and Technology*.—These subdivisions of the engineering field illustrate how a mature economy develops a great variety of ways for controlling and using the processes and resources of nature. The great productiveness of a country like America is due less to possession of natural resources than to the development of a wide range of skills. Thus three basic types of engineering have developed into numerous new technologies, which have tended to become independent fields.[1]

The engineer should be alert for any fundamental discovery which may be turned to practical use and for betterment of the processes he is using. The structure of engineering education should be such that when opportunities occur it will be possible for the country or the industries to collect requisite personnel, from technicians to executive engineers, to turn the discovery to use within as short a period as possible. Such a set-up of engineering education existed in Germany, and exists in the U. S. A., but not in the United Kingdom, of which the Indian system was for long a bad and obsolete copy. Thus though many of the great and fundamental discoveries which led to Radar and Atomic Energy utilisation were made by British physicists, their large scale utilisation for war purpose was possible only in America, where the requisite personnel of all types could be assembled and set to work.[2] The British recognized this defect in their structure of Engineering

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1 American prosperity grew alongside technical progress and was probably engendered more by individual enterprise and a constant preparedness to take great risks than by abnormal technical skill. But in the course of its development America has acquired a great number of technically trained men, produced by many efficient and now famous technical institutions, some established by great foresight, but most growing by the slow process of supply and demand. (Univ. Quarterly, Vol. 2, 1948).

2 " During the War, Britain distinguished itself in the realm of pure science, but the rapid and large scale development of new discoveries was carried out more successfully in America and Germany than in this country ". (Indroduction to Engineering in Universities, Univ. Quarterly, Feb. 1948, p. 163).

and Technological Education during the course of the last war. Their Ministry of Education set up a committee under Lord Eustace Percy " To advise the Ministry on the needs of higher technical education in England and Wales, with particular attention to the means required for maintaining appropriate co-operation between universities and technical colleges. "

III.—Engineering and Technological Education in India up to 1920.

9. *The Beginnings of Engineering Education in India.*—The impulse for creation of centres of technical training came from the British rulers of India, and it arose out of the necessity for the training of overseers for construction and maintenance of public buildings, roads, canals, and ports, and for the training of artisans and craftsmen for the use of instruments, and apparatus needed for the army, the navy, and the survey department. The superintending engineers were mostly recruited from Britain from the Cooper's Hill College, and this applied as well to foremen and artificers ; but this could not be done in the case of lower grades—craftsmen, artisans and sub-overseers who were recruited locally. As they were mostly illiterate, efficiency was low. The necessity to make them more efficient by giving them elementary lessons in reading, writing, arithmetic, geometry, and mechanics, led to the establishment of industrial schools attached to Ordnance Factories and other engineering establishments.

While it is stated that such schools existed in Calcutta and Bombay as early as 1825, the first authentic account we have is that of an industrial school established at Guindy, Madras, in 1842, attached to the Gun Carriage Factory there. A school for the training of overseers was known to exist in Poona in 1854.

Meanwhile in Europe and America, Colleges of Engineering were growing up, which drew to them men having good education, and special proficiency in mathematical subjects. This led to discussions in Governments circles in India, and similar institutions were sought to be established in the Presidency Towns.

10. *Engineering Colleges.*—The first engineering college was established in the U.P. in 1847 for the training of Civil Engineers at Roorkee, which made use of the large workshops and public buildings there that were erected for the Upper Ganges Canal. The Roorkee College (or to give it its official name ; the Thomason Engineering College) was never affiliated to any university, but has been giving diplomas which are considered to be equivalent to degrees.

In pursuance of the Government policy, three Engineering Colleges were opened by about 1856 in the three Presidencies. In Bengal, a College called the Calcutta College of Civil Engineering was opened at the Writers' Buildings in November 1856 ; the name was changed to Bengal Engineering College in 1857; and it was affiliated to the Calcutta University. It gave a licentiate course in Civil Engineering. In 1865 it was amalgamated with the Presidency College. Later, in 1880, it was detached from the Presidency College and shifted to its present quarters at Sibpur, occupying the premises and buildings belonging to the Bishop's College.

Proposals for having an Engineering College at Bombay city having failed for some reasons, the overseers' school at Poona eventually became the Poona College of Engineering and affiliated to the Bombay University in 1858. For a long time, this was the only College of Engineering in the Western Presidency.

In the Madras Presidency, the industrial school attached to the Gun Carriage Factory became ultimately the Guindy College of Engineering and affiliated to the Madras University (1858).

The educational work in the three Colleges of Sibpur, Poona, and Guindy has been more or less similar. They all had licentiate courses in civil engineering upto 1880, when they organised degree classes in this branch alone. After 1880, the demand for mechanical and electrical engineering was felt, but the three Engineering Colleges started only apprenticeship classes in these subjects. The Victoria Jubilee Technical Institute, which was started at Bombay in 1887, had as its objective the training of licentiates in Electrical, Mechanical and Textile Engineering.

11. *Electrical and Mechanical Engineering Courses.*—In 1915, the Indian Institute of Science, Bangalore, opened Electrical Engineering classes under Dr. Alfred Hay, and began to give certificates and associateships, the latter being regarded equivalent to a degree.

In Bengal, the leaders of the Swadeshi Movement organised in 1907 a National Council of Education which tried to organise a truly National University. Out of the many institutions it started, only the College of Engineering and Technology at Jadavpur had survived. It started granting diplomas in a mechanical and engineering course in 1908, and in chemical engineering in 1921.

The Calcutta University Commission, debated the pros and cons for the introduction of degree courses in mechanical and electrical engineering. One of the reasons cited, from the recommendations of the Indian Industrial Commission, (1915, under the

Chairmanship of Sir Thomas Holland) against the introduction of electrical engineering courses is given in the following quotation from their report[1]: "We have not specifically referred to the training of electrical engineers, because electrical manufactures have not yet been started in India, and there is only scope for the employment of men to do simple repair work, to take charge of the running of electrical machinery, and to manage and control hydro-electric and steam-operated stations. The men required for these three classes of work will be provided by the foregoing proposals for the training of the various grades required in mechanical engineering. They will have to acquire, in addition, special experience in electrical matters, but, till this branch of engineering is developed on the constructional side, and the manufacture of electrical machinery taken in hand, the managers of electrical undertakings must train their own men, making such use as they can of the special facilities offered for instruction at the engineering colleges and the Indian Institute of Science".

The credit of first starting degree classes in mechanical and electrical engineering and in metallurgy belong to the University of Banaras, thanks to the foresight of its great founder, Pt. Madan Mohan Malaviya (1917).

About fifteen years later, in 1931-32, the Bengal Engineering College at Sibpur started mechanical engineering courses, electrical engineering courses in 1935-36, and courses in metallurgy in 1939-40. Courses in these subjects were also introduced at Guindy and Poona about the same time.

Quite a number of engineering colleges have been started since August 15, 1947. It is due to the realisation that India has to become a great industrial country, and would require a far larger number of engineers than could be supplied by the older institutions. In some cases, existing lower type institutions have been raised to the status of degree-giving colleges.

12. *Technological Education.*—The Technological Institutes at present existing in the country, and the subjects and the standard for which they provide instruction, are shown in Table 2. These institutes are of different types; some are parts of universities, *e.g.* departments of applied physics and chemistry at the Calcutta, Andhra, and Banaras universities; some are polytechnics of different standards, *e.g.* the Indian Institute of Science, Bangalore, which is of the University standard, and others of a lower standard. A few are monotechnics, devoted to one subject only, like sugar, textiles, leather. These are not generally affiliated to any university, but are managed mostly by Departments of Industry.

1. Report of Calcutta University Commission, Vol. 4, Chap. 46.

IV.—Types of Training for Engineers.

13. *Classification of Engineers.*—The engineering profession has become so much diversified that in order to consider intelligently the demand for engineering services and the adequacy of available educational resources, a classification of engineers is desirable. The British Committee set up the following classification :—

1. Senior Administrators and Executives.
2. Engineer-Scientists, Design and Development Engineers.
3. Engineers required for production, operations, maintenance and sale.
4. Technical Assistants and Designer Draftsmen.
5. Draftsmen, Foremen and Craftsmen.

A supply of men in all these grades in the right proportion is essential for the rural, industrial and other technical development of the country.

14. *Grade 5.—Draftsmen, foremen and craftsmen.*—They used to be recruited from the artisan class. With the spread of universal education, they are more and more being recruited from types which show more aptitude in such fields than in theoretical education. It is becoming increasingly evident that definite schemes of training for these services is desirable. Since there is very inadequate provision for such training in our country, this type of boys continues in the literary courses with unhappy results.

Appropriate elements of technical training should be introduced into the education programme of such students when it becomes evident that their best personal development and useful service will be in the technical lines. We should either introduce vocational courses into their regular school education, or set up separate vocational or technical schools.

15. *Grade 4.—Technical assistants and designer draftsmen.*—They have completed ten years of schooling, but are not adapted to theoretical work. In Europe and America, they are given engineering training in polytechnics, continuation schools, or in night schools. Very often they alternate instruction with work. In England such classes of students are given "National Certificates". They are also allowed to seek admission into Engineering Colleges, and to qualify for degrees when they have shown the necessary aptitudes.

16. *Grade 3.—Engineers required for production, operations, maintenance and sale.*—They are generally trained in engineering colleges affiliated to universities which grant degrees, or in technical institutes not affiliated to universities which give diplomas of

their own, equivalent to degrees. This grade forms the main body of the engineering profession.

India has now a number of engineering colleges and technical institutes training men of this grade, as shown in Table 1.

17. *Grade 2.—Engineer Scientists, Design and Development Engineers.*—This class of men, who are responsible for directive efforts in the engineering profession, is generally developed either out of grade 3 men who, after graduation pursue post-graduate courses in a specialized branch of engineering in some recognised institute or in course of their professional career acquire sufficient knowledge and experience so that they can act as consultants and originators for the design of great engineering projects. They also sometimes come from the rank of pure scientists who wish to turn some discovery or facts of science to practical use, and thus help themselves to the amount of engineering required for the purpose.

More frequently scientists and engineers have to collaborate in a joint programme, as is exemplified by the classical case of Haber, the physical chemist, collaborating with Bosch, the engineer in evolving the synthetic ammonia plant just before the first World War. Such teams of work of scientists and engineers have become quite common, and should be encouraged in our country.

18. *Grade 1.—Engineer Administrators, Executives etc.*—As civilisation grows more and more complex, and new discoveries in science and technology are being put to large scale use, great engineering adventures are being undertaken in every country, for example the Tennessee Valley Schemes and the Atomic Energy Projects in the U.S.A. and the great hydroelectric and river development projects in different countries of the world, including our own. Earlier we had the great Railway and Canal projects. The organisation of large factories like the Tata Iron and Steel Company falls in same category.

The ideal head of such an organisation should be an executive who is also an engineer, scientist or technician and who has an intimate knowledge of the science and technique of the particular undertaking, both on the theoretical and practical side; and besides has knowledge of finance and business administration, and can handle large bodies of men. Such combinations are rare among professional engineers or scientists, and therefore very often such posts were filled by lawyers, financiers, or even political leaders. Though some of these administrators have done their job well, there have been many failures or cases of gross mismanagement. It is preferable that engineers and scientists are put in charge of such jobs.

Our government has planned a number of river-valley projects, and large industrial establishments under central control. The success of these undertakings will depend upon the right kind of administrators and executives for their management.

The particular combination of qualities which ripen into the effective Executive and Administrator can not always be foreseen. Frequently large concerns find their leadership in men who have proved their ability in small undertakings. About the best insurance for providing executives for large projects is the existence of a large variety of small and medium sized industries and other economic undertakings. They provide training ground and apprenticeship for larger responsibilities. Courses including industrial engineering which prepare men for such leadership of small undertakings is about the best contribution that can be made by engineering education for this class of engineers and administrators.

V.—Indian Engineering and Technological Colleges.

19. *Tables 1 and 2.*—Tables 1 and 2 give the details of Indian engineering and technological colleges—their date of establishment, the subjects they teach, and the intake of students and other details.

TABLE I

Name of Institution. 1	Esta-blished. 2	Civil. 3	Mecha-nical. 4	Electri-cal. 5	Mech. and Elec. Combined 6	Chemi-cal. 7	Undifferen-tiated. 8	Other Subjects. 9	Remarks. 10
Thomason Engineering College (Roorkee)	1846	30	15	13	..	..	..	..	
Bengal Engineering College (Sibpur) ..	1856	104	26	29	..	..	..	6 Metallurgical	
College of Engineering (Poona)	1858	100	..	..	50	..	..	20 Tele-Communication (Line).	
College of Engineering (Guindy) ..	1858	40	25	25	..	..	..	16 Tele-Communication (Line.)	
College of Engineering and Technology (Jadavpur).	1912	..	..	..	..	80	356 (4, 5)[1]	2 Refrigeration	
Engineering College (Banaras) ..	1917	..	..	..	..	12	137 (4, 5)[1]	40 Metallurgy 20 Mining.	
College of Engineering (Travancore) ..	1937	34	8	8	..	..	..	..	
College of Engineering (Aligarh) ..	1939	30	20	23	..	..	..	..	
College of Engineering (Bangalore) ..	..	..	..	..	..	..	125 (3, 4, 5, 7)[1]	..	
V. J. T. Institute (Bombay)	1887	..	..	..	54	..	..	..	Raised to degree standard 1946.
College of Engineering (Annamalai) ..	1945	60	20	20	..	25	..	..	
College of Engineering (Calcutta) ..	1946	10	..	..	..	..	..	..	
Birla College of Engineering (Pilani) ..	1946	..	..	..	150	..	..	..	
Bihar College of Engineering (Patna) ..	..	50	..	..	..	..	..	..	
Government Engineering College (Jubbulpore).	1947	30	15	20	..	..	..	15 Tele-Communication (Line.)	
New College of Engineering (Sangli) ..	1947	60	..	..	..	..	..	..	
East Punjab Engineering College (Roorkee)	1947	18	9	9	..	..	..	..	
College of Engineering (Anantapur) ..	1947	..	..	..	..		50 (3,4,5)[1]	..	
College of Engineering (Coconada) ..	1947	..	..	..	..	..	105 (3, 4, 5)[1]	..	
A. H. College of Technology (Coimbatore)	..	30	..	30	..	..	..	15 Textile Technology.	Automobile Engg-informative stage.
Delhi Polytechnic (Delhi)	..	..	..	51	..	16	..	12 Architecture	
College of Engineering (Ahmedabad) ..	..	..	..	..	..	..	..	..	Just started.
College of Engineering (Anand) ..	..	..	..	..	..	..	..	..	Do.
Total ..	..	596	138	228	254	133	773	Metallurgy Tele-Comm. 51 Mining 20 Architecture 12 Textile Tech. 15 Refrigeration 2	

[1]Awarded diplomas equivalent to Degree.

TABLE 2

Institution.	Established.	Chemical.	Textile.	Leather.	Mining.	Dyes.	Applied Chem.	Plastics and Paints.	Oils Fats Soaps.	Pharmacy.	Food and Drugs.	Industrial Chem.	Glass and Ceramics.	Sugar Tech.	Oil Tech.	Int. Comb. Engg.	Metallurgy.	Aeronautical Engg.	Applied Physics.
Department of Chemical Technology Bombay Uny. (Bombay.)	..	[1]67	16	..	..	12	..	6	8	12	10	..	..	..	..	..	..	..	..
Luxminarayan Institute of Tech. (Nagpur)	..	12	..	..	..	..	..	..	12	..	..	..	..	..	..	..	..	..	..
College of Technology, Banaras Hindu University (Banaras)	..	[1]20	..	..	..	..	..	..	..	[1]18	..	[1]70	[1]31	..	..	..	..	..	..
Harcourt Butler Tech. Institute, (Kanpur)	..	4	..	..	..	..	..	..	21	..	..	..	..	..	..	..	..	..	..
A. C. College of Tech. (Madras)	1946	20	20	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maharajas College Ernakulam	..	..	..	..	..	..	..	..	6	6	..	..	..	..	..	..	..	..	..
Indian Institute of Science, Bangalore	1911	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	12	4	..
College of Science, Andhra University, (Waltair) ..	..	2	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	8
Dept. of Applied Chemistry, Calcutta University (Calcutta)	..	..	..	..	..	..	38	..	..	..	..	..	..	..	..	..	..	..	..
Department of Applied Physics, Calcutta University (Calcutta)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
[2]Indian School of Mines, (Dhanbad)	..	..	..	..	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..
[2]Indian Institute of Sugar Tech. (Kanpur)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..
[2]Sri Krishna Rajendra Tech. Institute, (Bangalore) ..	1946	..	[2]25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
[3]Bengal Textile Inst. (Berhampur)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
[3]Bengal Silk Tech. Inst. (Berhampur)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

[1]Includes Post-graduate students. [2]Monotechnics with Degree Standard. [3]Proposed.

20. The following table shows the intake of the colleges in the different branches of engineering :—

TABLE 3

Number of Colleges Offering Courses.	Intake.
Civil	596
Mechanical and Electrical Combined	254
Mechanical	138
Electrical	228
Undifferentiated	773
Communication	51
Metallurgy	46
Chemical	153
Mining	20
Others	256
Total	2,515

The total intake in purely engineering subjects may be taken to be about 2,500. We have calculated the percentage of those who are expected to pass in the final tests, from the figures of intake and output available for Banaras as given below :

ENGINEERING COLLEGE, BANARAS HINDU UNIVERSITY, BANARAS.

Table showing the No. of Students who applied, were admitted and graduated—1930-1944.

TABLE 4

No. of students.	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Applied	388	510	505	339	310	255	268	261	350	436	581	796	950	1,140	1,155
Were admitted	201	181	120	122	122	121	133	145	125	101	121	122	122	131	129
Graduated [1]	77	80	44	57	57	57	64	57	60	44	53	60	53	68	79
Year of Graduation.	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948

1. Total admitted 1930-1944 1996
2. Total graduated 1934-1948 910
3. Percentage of 2 to 1 .. .. 45·06

This works out at 45%. If the same percentage holds for other Indian Universities, we shall be producing nearly 1,130 engineering graduates each year, and within the next 5 years nearly 6,000 graduates with B.E. degrees.

[1] The figures for graduates are those which entered that year and graduated four years later.

22. *Comparison with Britain and U.S.A.*—Let us compare this output of engineering graduates with that of other countries. In Great Britain the wartime graduates or diploma holders equivalent to graduates in the three main branches of engineering is stated by the British Committee to have been about 3,000, of which 1,250 came from universities, though the normal output is stated to be not larger than 2,300. The British Committee recommended measures for maintaining this output for the next ten years (subsequent to 1946), which we understand was accepted by the ministry, and given full effect to. The enrolment in 1948 is stated to be 4,562[1].

The American enrolment for 1948[2] is stated to have reached the enormous figure of 2,40,000 in 1947. This is surely an inflated figure due to rush of veterans. The figures for 1942 is stated to have been 1,13,000. This may be taken to be the normal figure. Taking that 45% passes through, the American output for the next few years may be taken to be about 50,000 which is nearly 17 times as large as that of Great Britain and 40 times that of India.

Technologists.—It is difficult to give an estimate of the production of technologists as very few data are available. There seems to be no place in the country for the training of fuel and furnace technologists or students of other subjects, like refrigeration. There is some provision for training of textile and leather technologists, but these should be considerably strengthened.

While reviewing the progress of engineering and technological education in India and abroad, we notice that it started everywhere at about the same epoch. But while, due to political and other reasons, engineering and technological education has remained stagnant in India over long periods, it progressed by enormous strides in Europe and America[3] and developed as we said earlier, a great variety of ways of utilizing natural resources. This country has to catch up by a colossal effort if our economic problems are to be solved.

VI.—Our requirements in Engineering and Technical Personnel

21. *Scientific Man-Power Committee's Estimates.*—The Scientific Man-Power Committee, appointed by the Government of India in March, 1947, assessed the requirements for scientific and technical personnel during the next 5 to 10 years (1947-52, 1952-57) to meet the demands of the various Government departments (Civil only, excluding Defence), for schemes of expansion of industrial and agricultural production, transport, medicine, education and other fields

[1] *Universities Quarterly, Vol. 2, P. 171.*

[2] From *Handbook of American Universities and Colleges, 1948.*

[3] *Two American Universities viz those of Illinois and Ohio have between them a total enrolment of 9000, equal to all the Indian engineering colleges, and teach a larger variety of branches.*

in accordance with declared policies of the Government. Their estimate is given in the following Table :—

TABLE 5

Category	No. required. Senior Grade.	Junior Grade.
Engineers of all categories	25,250	28,700
Architects	310	..
Metallurgists	1,090	150
Glass & Ceramics Technologists	320	340
Fuel & Furnace Technologists	310	..
Textile Technologists	780	950
Leather Technologists	350	450
Chemists & Chemical Technologists	6,560	3,990
Physicists	3,300	220
Mathematicians & Statisticians	1,560	60
Botanists	900	..
Zoologists	1,430	..
Biologists	680	..
Geologists & Geophysicists	1,420	..
Agricultural Scientists	2,640	610
Dairy Technologists	700	..
Doctors	19,740	..
Non-medical personnel (Nurses)	32,510	..
Science Teachers—		
Graduates in Science	16,220	
Intermediate in Science	1,82,300	..
Intermediates in Science as Technical personnel	500	..
Unclassified Scientific and Technical Personnel	3,820	..
Intermediates in Science as Technical personnel	500	..

These figures seem to have in view only government positions or needs of large corporations. The development of technical men to start and direct small independent industries will require larger numbers of engineers and technical men.

The Senior Grade of the Scientific Man-Power Committee may be taken to correspond to our Grade 3 : The need of the country is estimated to be nearly 27,000 (this includes Engineers, Architects, Metallurgists and Chemical Technologists) in 5-10 years, depending upon the speed of the constructive works undertaken. So the yearly demand varies from 5,400 to 2,700 per year. The outturn of Indian Colleges is expected to be 1,130 per year. So the prospective supply falls far below the demand. The demand can probably be met if at least one or two of the proposed higher Technological institutes is started as early as possible.

VII.—Courses of Study.

22. *Present Position of Our Colleges.*—Though many of the older colleges have tolerable equipment in civil and mechanical engineering, the equipment in electrical engineering in most cases appeared to be insufficient and out of date. Excepting at one or two places, the equipment in chemical engineering and radio communication engineering and other branches needs considerable strengthening if satisfactory work is to be done. The financial resources of many colleges do not enable them to carry out the desired improvements. They naturally look to provincial and central governments for aid.

For reasons stated earlier, India has not kept pace with the growth of engineering and technological education in other countries, notably the U.S.A. Indian engineering colleges have not produced Engineer scientists of grade 2, except a few here and there, nor have they developed diversified courses as in Europe and America.

23. *General Education for the Engineer.*—Engineers of even the highest grades generally have little background of general education. They commonly lack preparation in practical subjects closely related to technical engineering such as business administration, labour relations, and industrial finance, though frequently the success of engineering projects depends as much on competence in these fields as in engineering technology.

The reason for this lack is that the engineering courses have generally been limited to engineering technology and the underlying physical sciences and mathematics. As a result, with a few notable exceptions, the engineer is not prepared to take a broad and inclusive view of affairs, nor to take significant part in the determination of state policy, even relating to large engineering projects. The engineer tends to carry out other men's purposes, rather than to be a determiner of purpose.

This limitation of the engineer is due to historical causes. As remarked earlier, the engineer evolved from the craftsman, whose opinions on matters of general policy did not often count with men of affairs. The craftsman was expected to carry out the plans of his superior, and not to share in policy making. This attitude was carried over into formal training, since the forerunners of modern engineering schools were little more than institutions for improving the skill of craftsmen. Even engineers recruited from the educated classes were steeped in this attitude in the engineering colleges, having gone there directly from matriculation or intermediate. In

engineering colleges they were so immersed in technical courses that they had little time for educational exploration or interest outside their fields.

It is time to create a new pattern for engineering education by including courses in general education, and secondly by making place for such practical courses as business administration, labour relations, and industrial finance. Such revision is under way in America in numerous engineering institutions, including the Technical Institute of the North Western University, Chicago, the Massachusetts Institute of Technology (M.I.T.) and other small and large institutions.[7]

This revision has also been recommended by the British Technological Education Committee. Our scrutiny of the curricula of our engineering colleges does not show any marked tendency on their part to revise their syllabuses excepting in the revised programme of the Bengal Engineering College, Sibpur. We would strongly recommend that the courses in humanities, business administration, labour relations, industrial finance etc. be included in the curriculum of undergraduate engineering studies.

24. *Works Training.*—It is well recognised that neither university nor college courses alone can produce a trained engineer. As the British Technological Education Committee puts it, "Technological education must be conceived in terms of a combined course of works training and academic studies, and both the course as a whole and the period allotted to academic studies must be long enough to give full scope to the students' development".

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[7]The Swiss Federal Institute of Technology at Zurich has an Engineering Department with an international reputation. The course extends over a period of four and a quarter years. Each year consists of two terms and five months vacation. The staff unanimously regard a four-year engineering course as insufficient, and there has recently been a good deal of discussion as to the desirability of extending the course to five years. Regretfully this has been rejected as impracticable.

Another remarkable aspect of the work at Zurich is the voluntary courses in the humanities. From five to seven o'clock every afternoon lectures are given on the humanities. No lectures or laboratory classes are allowed on technical matters during those hours. It is compulsory for all students to attend at least one course in these cultural subjects in order to be granted a diploma. There are no examinations on these cultural courses, but there is a strong tradition, which is generally supported by the staff, that the students should attend them. And in fact they do attend in large numbers. The staff on the humanities side is considerable and includes several full professors. The lectures given each week during the winter term of 1947 were as follows :

Literature, languages, philosophy	34
History and politics	9
The arts and history of art	9
Economics and law	12
Total ..	64

(From Universities Quarterly vol. 2)

The various ways of providing practical training are :—

(1) After graduation the student may be apprenticed for a period of one year, generally in some engineering establishment or industrial firm.

(2) The student, after spending one year of full time on the campus in academic study, may alternate study with work, and take five years in place of four for his engineering education. This system is being followed in 50 to 75 American Institutions. We refer to a note on the subject in the appendix G.

(3) The student may utilize his long vacation in works training in engineering establishments or industrial firms. This is practised to some extent in British universities.

We have observed among teachers of engineering courses in our country a fairly common failure to realize the vital part which works practice plays in engineering education.

25. *Facilities for Works Practice.*—Our general impression is that facilities for works practice exist in civil engineering, and to a smaller extent in mechanical engineering, in the industries and railway workshops, though the organisation of the training admits of much improvement. The same is true of metallurgy and chemical engineering.

The picture is different for some branches of electrical engineering, on account of the absence of large manufacturing works. We therefore welcome the establishment of a Power Engineering Department at the Indian Institute of Science, Bangalore, where works training would be given to 60 graduates from the engineering colleges.

The proper organisation of works training for the engineering graduate should be carefully considered by the Advisory Panel on Engineering and Technology, for the University Grants Commission.

26. *Length of the First Degree Courses.*—We are strongly of the view, that degree courses in Engineering should be of four years' duration after intermediate in Science, exclusive of the period for works training, or of five years' duration in case of works practice is to be alternated with study. Our scrutiny of the syllabuses of the engineering colleges shows that their courses cannot be effectively

completed by average students in less than four years after their intermediate stage. This will be especially the case if courses in humanities and other subjects are included in the curriculum of studies.

The analogy which is often cited of British universities giving engineering degrees in three years is, we believe, misleading. The British student is admitted to the degree courses in engineering after 13 years of schooling while the Indian student is admitted after he has passed his intermediate in science, which requires 12 years of schooling. The British student when he enters an Engineering College, has more of science and mathematics than the Indian student, and though a course of three years may be enough for the British student, it is not so for the Indian student, if he is to attain the same degree of proficiency.

In American Engineering Colleges there is a growing tendency to advise five years of full time Engineering study for the B.Sc. degree in engineering.

VIII.—Master's and Doctor's degrees in Engineering and Technology.

27. *The Need for Advanced Study.*—Indian universities and colleges following their prototypes in England, have not organised Master's or Research degree in Engineering subjects. But while in England individual professors and teachers in other ranks have made detailed study of technological problems and carried out important researches, so that bodies of consultants, design and development engineers and executives have grown up (grades 1 and 2), such has not been the case in India. Indian engineers, with some notable exceptions, have not gone beyond grade 2, carrying out routine duties, and have very rarely been trying to improve processes, or bring an original mind to the innumerable problems confronting the Engineer. We have therefore no proper body of consultants or grade 2-men except in certain limited aspects of civil engineering.

One of the arguments against the establishment of the Master's degree was that an Engineer's undergraduate education was already sufficiently specialized, as the general course is followed by special courses in civil, electrical or mechanical engineering. It is obvious that such an attitude is not justified in view of the constantly growing diversification of the engineering profession already referred to, a diversification which is necessitated by the growing complexities of technology.

American[1] and German systems of technological and engineering education have been responding betimes to these trends of development, but Britain[2] has not done so to any considerable extent.

We endorse therefore wholeheartedly the recent attempts at Madras and Calcutta and other centres to organise post-graduate training in engineering subjects. Initiation of post-graduate courses are necessary to meet the demands for engineers and technologists of grade 2, who are now required in large numbers for planning and designing the constructive works undertaken for rapid industrialization.

28. *Dichotomy in Our Engineering Set-up.*—It has been assumed for a long time that India should remain for ever an agricultural country, using primitive methods; and should export raw materials abroad for processing and get manufactured goods from abroad. The policy did not stop there. All the constructive works for transportation, communication and industries, both civil and defence design and consultation, and the research needed for them, were carried out abroad.

To give examples : Though India has hundreds of cities, designs for city water supplies or of city sewerage systems have been rarely done by Indian engineers. A large part of the planning and designing formerly was made, usually at very high cost, by foreign firms. The same has been the case with designs of hundreds of bridges, railway lines and factories. When we come to industries, say textiles, sugar and jute, all machines have been imported from abroad. When these machines get worn out, they are generally replaced by new machines imported from abroad. It would be expected that in course of time, organizations would grow in India for their repair, replacement and manufacture. No such attempt at research and development work has been made on a large scale for the huge number of production machines required for the Indian industries. The

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[1] The Handbook of '*American Universities and Colleges, 1948*', edited by Brumhaugh says : "Graduate studies in Engineering developed during the early years, but recent years have seen a marked increase. Advanced study has become a virtual necessity for occupants of many of the higher technological positions in industry, government and education. The continued rapid expansion of American research has further emphasized this need. Graduate studies have grown till a large proportion of engineering schools in the U.S.A. now offer graduate degrees. Several institutions in metropolitan areas offer graduate work on a part-time basis for the benefit of engineers employed in industry. Some companies have made special arrangements with educational institutions in their localities to encourage such programmes".

The British system of undergraduate education produces results as good as any in the world, but a similar claim for the efficiency of post-graduate studies can scarcely be maintained. Most British universities have no post-graduate school of engineering and a student who, having taken his initial degree, wishes to continue his studies in a particular branch finds it difficult to do so. (Univ. Quarterly, Vol. 2.).

same is the case with respect to electrical power stations (thermal and hydro-electric), all machinery and equipment for which are brought from foreign countries and installed according to the design given by the suppliers, and some key men in the employment of these firms are retained to act as Superintendents over the maintenance and operation engineers. In fact, for research, developmental work and design, this country has been almost entirely dependent on alliance with alien organizations in almost every great engineering and technical undertaking, both governmental and private. The departure of the British has therefore produced a decapitation in our engineering and technological set-up. Our engineering profession is left, as it were, a body without a head, and as in the case of the hydra, the head must be grown organically from the body, or we must continue to import consultants and designers at enormous expenses for all the great schemes in view.

IX.—The Proposed Higher Technological Institutes.

29. *Committee for Higher Technological Institutes.*—The initiation of Postgraduate Training and Research work in Engineering and Technological Colleges will give the country indigenous brain-trusts for proper planning, design, and execution of these huge undertakings, and we would therefore give the first priority to the organization of the Higher Technological Institutes, where training of such men is deliberately planned, for we are not sure how long it will take for the older Engineering Colleges to develop the proper atmosphere for training of such men, or whether they will grow at all, in view of the prevailing atmosphere, tradition, and rules of service and recruitment[1].

The difficulty of securing men of grade 2 was apparent even to the old Government, for in 1945 they appointed a Committee with Mr. N. R. Sarkar as Chairman with the following terms of reference.

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[1] The position of research as distinct from postgraduate study is somewhat better. Most university Engineering Departments devote some attention to research but generally not nearly enough. There are various causes for this neglect ; many men who give devoted service as teachers have no inclination or flair for research; others have been obliged to give so much time to teaching as to leave no energy for other activities. Some with time, energy and desire, have been handicapped by lack of funds. Finally, and from some stand points perhaps this is the most serious difficulty, men of proved ability find that the more senior posts entail so much time spent on administration that little is left for research or for directing their students.

This must be remedied if research is to take its proper place in university engineering Departments and there should be no mistake as to the importance of this. The teacher not engaged in research seldom keeps a lively interest in his subject and his work suffers. But apart from this it is one of the main functions of the universities to develop research—partly for results, but perhaps more important still because research workers are needed in industry and the education of some of them at least is the duty of the universities.

Taken from Universities Quarterly.

" With a view to ensuring an adequate supply of technical personnel who will be required for post-war industrial development in this country, it is necessary to consider whether it is desirable to have a central institution on the lines of the Massachusetts Institute of Technology, with a number of subordinate institutions affiliated with it, or to have higher institutions on a regional basis."

30. *Its Recommendations.*—In March, 1946 this Committee made the following recommendations to the Government of India :—

(*i*) Not less than four Higher Technical Institutions, one in the North, one in the East, one in the South and one in the West, will be necessary to satisfy the post-war requirements.

(*ii*) The one in the East should be set up in or near Calcutta at an early date.

(*iii*) Establishment of the Western Institution, which should be in or near Bombay, should be taken in hand concurrently with the Eastern Institution, or failing that, as soon after as possible.

(*iv*) To satisfy the immediate needs for engineers generally and for those with specialised training in Hydraulics in particular, the engineering nucleus of the Northern Institution should be set up without delay.

(*v*) To ensure the proper planning of buildings, equipment and courses of study, the Principal and Heads of the Main Departments of these institutions should be appointed, and the services of an architect with experience in the planning of technical institution secured, at a sufficiently early stage.

On enquiry, the Ministry of Education, has provided the following information less :—

31. *Progress of plans.*—" The All India Council for Technical Education at its first meeting held in April/May 1946 considered the Interim report of the Sarkar Committee and endorsed the opinion that to meet India's post-war needs for high grade Engineers, Technologists etc., there should be established four Regional Higher Technical Institutions in the East, West, South and North, on the lines of the Massachussetts Institute of Technology, and the Government have accepted the establishment of two of these institutions *viz.*, one in the East near Calcutta and the other in the West near Bombay, in the first quinquennium from 1947.

The question of exact location of these institutions was further discussed at the third meeting of the All India Council for Technical Education held in April, 1948 and the following resolutions were passed by the Council :—

1. The Council recommends that the site at Hijli, which affords all necessary facilities and is within easy reach of Calcutta and is in proximity to the Provinces of Bihar and Orissa, may be chosen for starting the Eastern Higher Technical Institution.

2. The Council is of the opinion that steps should be taken by the Government of India for the establishment of four higher technological institutions in the following order :

   (*i*) Eastern and Western Institutions (at Hijli and at Bombay).

   (*ii*) Southern and Northern Institutions (Location to be decided later),

   and that immediate negotiations should be carried on with the Provincial Governments concerned for the sites required. The Council recommends that the necessary land (1,000 to 1,250 acres in each case) should be made available to the Government of India by the provincial Governments concerned free of cost. The Provincial Government should also be required to arrange for the supply of electricity, water etc., as may be required for these institutions.

The Government of West Bengal have already agreed to let the Government of India have the site at Hijli free of cost and have also permitted the use of buildings on the site to enable an early start. Steps are being taken to renovate these buildings and to improve the existing arrangements for water Supply.

Steps are also being taken to recruit an expert planning staff for the Institution. Selection Committees are being formed to interview prospective candidates in U. S. A. and U. K. and the continent and it is hoped that the planning staff will be recruited before the end of the year.

As regards the Western Higher Technical Institution, the Government of Bombay have notified an area of about 800 acres at the North Kurla site, Bombay with a view to its acquisition for the proposed Institution."

No steps have yet been taken on the location of the Southern Higher Technological Institute, but there is a suggestion by the

Reviewing Committee of the Indian Institute of Science that this institute, which has been in existence for over thirty-eight years, is in the best position to be converted to the Southern Higher Technological Institute, for it has already a large number of technical departments which are needed for such an Institution, and strong departments of pure sciences—physics, chemistry and biochemistry.

The U. P. Government has passed an Act converting the Thomason College of Engineering at Roorkee to a technological university. This is purely a provincial measure. This institution may be made the basis of the Northern H. T. Institute or a new one established at Kanpur.

General Plans for the Eastern and Western Institutes have been drawn up, each to have capacity to train about 2,000 undergraduates in engineering and technology and to provide facilities for 1,000 postgraduate and research students in a wide range of subjects. Each of them is expected to be completed within a capital expenditure of Rs. three crores, and will involve a recurring expenditure of Rs. 68 lacs.

It is gratifying to note that some progress has been made with the Higher Technological Institutes. It is in the interests of the country that they start functioning as early as possible.

X.—The possibility of Works Training Opportunities in U. S. A.

32. *Know-how Methods.*—The expression " know how " in industry refers to the vast total of experience, knowledge and skill in any field which makes the difference between the man who knows the book theory of any industrial process and the man who by long experience and skill actually knows how to do it. A large part of " know how " never gets into books or college classes, and that which does get in is commonly out of date.

33. *Need for Training in U. S. A.*—The high degree of efficiency in American industry can never be fully learned from books. It must be learnt on the job. For that reason it is important that a number of Indian engineering graduates have periods of actual experience in some of the best managed American industries. It would be better if they should be paid employees so that they could get a first hand feel of the industrial processes. They might do this first as part time work and study as graduate students in American Educational Institutions. At present it is the policy of the American Government to prohibit employment for pay of those who go to America to study industrial methods unless they are regular students in Educational institutions with work and study

programmes. It might be desirable for the Indian Government to make a formal request to the American Government for permission for a limited number of engineering and business graduates to hold paying jobs in America for periods of not more than two years. It might be well to make such request for one or two thousand such engineering students, each to be selected by a suitable agency and to be accredited by the Indian Government. A further note on this matter is given in Appendix I.

XI.—The need for new types of Engineering and Technical Institutions.

34. *The Method of Approach.*—India needs more engineering schools. However, our greatest need is not for more like those we have. In starting a new engineering school we should ask ourselves, what is it India most needs in fields requiring scientific or engineering skill ? In preparing to meet those needs with a new engineering institution, not too much deference should be paid to the way in which engineering schools have been conducted in the past either in this or other countries. Rather, the chief questions to be asked are : what are the needs we are trying to meet in this institution, what methods, conventional or unconventional, would be best for meeting such needs ?

In any new engineering school there is one principle which may apply almost universally. The aim should be to produce, not merely men skilled in technology, but also sound, well integrated individuals and citizens. Therefore, the element of general education should not be overlooked. Also, in most engineering courses, the underlying scientific and engineering studies will be common to nearly all fields. Thus, perhaps a half of the entire programme for students may be almost irrespective of the special field to be covered.

With this much of a foundation to start with, let us consider, as an example, the planning of a new engineering school which will have as its special field the preparation of industrial engineers to manage their own industries or to be in positions of responsibility in small industry.

35. *The need for Training Engineering and Technical Entrepreneurs.*—A large part of the total material needs of society is made up of a great number of minor items. These include a great variety of tools for various crafts ; kitchen utensils ; office supplies ; mechanical equipment, such as typewriters, adding machines, and scales for weighing ; photographic equipment ; fountain pens ; pencils, knives ; eye glasses ; laboratory equipment ; lighting fixtures ; paint, glass and varnishes ; drugs ; innumerable kinds of bottles, boxes and

other containers ; toilet articles, such as tooth brushes, combs and mirrors ; games and toys ; office and school furniture ; hardware or iron mongers' items, such as locks, springs, hinges, chains, and many other metal products ; headware, clothing and footwear ; surgical instruments and equipment ; dentists' equipment ; and other articles which would make a list many times as long as this one.

For government to try to manufacture and to distribute this vast variety of goods on a non-competitive basis would result in a vast amount of technical waste, inefficiency and, especially, in lack of technical progress. Such goods as a rule can best be supplied by the free play of private enterprise and initiation, with the public in effect voting on the need and worth of each article by buying or not buying.

When the manufacture of a new product is considered, there is no final test of its practical worth which is equal to the decision of the public to buy or not to buy. If a new article is faulty, or its cost too great, there is no greater incentive to its improvement than the desire of the manufacturer to make it acceptable to the buying public. To that end he will carry on research and try to improve this product, and to lower costs and prices.

Today India gets a large part of its supply of manufactured articles (consumers' goods) from abroad, or goes without them. There are needed a large number of men who combine engineering and business ability with a spirit of adventure, resourcefulness and self-reliance, and who will start a large number of small industries to supply the great variety of goods India needs.

Only to a limited extent do our Universities and engineering schools train young men for such undertakings. It was long the policy of England to keep India as a producer of raw materials, while English industry supplied manufactured goods. That spirit or lack of spirit has not been fully overcome in our schools. They commonly train men for government positions or as employees of great corporations. A combination of all round engineering and business ability, focussed on the production of some specific article, is seldom considered.

Students working in well equipped laboratories may come to think that expensive equipment is necessary for any undertaking, as it actually is necessary for many. They do not realise that many industries are started by individuals with perhaps only a few hundred rupees of capital. While research is essential to modern industry, frequently only very simple research is necessary for a beginning. The process of starting small, and of thoroughly

learning the industry from first hand experience, is excellent preparation for gradual and sound growth.

Because modern, independent, small industries have heretofore played such a small part in Indian life, teaching staffs in engineering schools have little backgrounds and experience in that field. They will have to learn while they teach. To make their teaching real it may be advisable for such engineering schools to undertake their own small industries from time to time. As students and teachers work together on the problems of such undertakings, the knowledge they get will be at first hand. In case such industries thrive and grow, they may supply good working opportunities for students in their part-time working periods. Also, if well managed, such industries may possibly help the cost of the institutions. In America a few of the smaller institutions largely support themselves in this way. Among such are Madison College of Madison, Tennessee, and Berrian Springs College, at Berrian Spring, Michigan. In India the foundry and machine shop at Nahan in Himachal Pradesh is an interesting development.

Also it would be wise for such engineering schools to make it possible for their teachers to visit other countries where industrial methods are furthest advanced, and to become acquainted with the methods of successful smaller industrial concerns. The teacher of industrial relations, of production methods, of marketing, etc., might each explore in his own field. In this way engineering and business practice might soon be abreast of those in the industrially most advanced nations. India greatly needs a new type of engineering training, which will combine good technical and business education with pioneering in the processes of production and marketing,

Engineers previously classified in this chapter as of grade I (administrators and Executives) need not be supermen. They may be reasonably intelligent men with the right kind of training. If there are in the country a large number of small industries headed by such men, occasionally one will have exceptional executive ability and will move to more far reaching responsibilities, public or private.

The technical phases of such training may be mechanical, electrical or chemical engineering on a foundation of general engineering science. The business phases should include such subjects as accounting, industrial relations, production methods, marketing, and business ethics.

In many cases the students' entire course might be planned around some particular type of product which he may later manufacture, such as lighting fixtures or fountain pens, tube well pumps or

products from sugar cane waste. Starting with general courses, specialization would gradually increase through the college years.

Such an engineering school also might undertake to provide an engineering and industrial advisory service to its graduates who had started in business for themselves and to small industries generally. Such a Service would provide excellent experience for the teaching staff and would meet an acute, though partly unrecognized, need of small industry.

Specialization of engineering schools might go even further. Decentralized industry thrives best if regions specialize in particular fields. For instance, one or more engineering schools in the sugar growing areas might specialize in sugar technology, and especially in turning waste materials like molasses and sugar cane bagasse into industrial products. The result might be many small industries in this field in one or two sugar producing areas. An engineering school on the Malabar coast might specialize in varied products of the cocoanut palm, and in industrial uses for the rutile, monazite, sillimanite, zircon, garnet, and ilmenite sands so abundant along the coast.

Clusters of industries in the same field, located in the same area, reinforce each other in technology, craftsmanship and marketing. A regional " know-how " tends to accumulate. Research and other technical services may develop. Eire (Ireland), in its efforts to develop decentralized industries, scattered them indiscriminately over the country, with the result that specialized know-how, technical services and marketing services are scattered and dissipated. Those who seek local self sufficiency should consider such disadvantages.

New engineering schools should not be just more of the same kind as now exist. If each new engineering school strives to meet a real need or opportunity, not necessarily in the conventional manner, but in the way in which creative thinking and critical inquiry, checked by all available experience, indicates to be best, engineering schools will have much greater variety, their graduates will have a greater range of opportunity, and our country will have a greater range of industrial development, than when there is a multiplication of conventional schools.

It is better that such engineering schools should not be isolated, but should be departments of universities, so that teachers of science, economics, industrial relations, and language, shall be available, and so that engineering students may have the advantage of an all round cultural atmosphere.

XII.—Closer liaison between Engineering and Technical Colleges and Universities.

36. *University atmosphere and Engineering Colleges.*—As we have stressed earlier, engineering is largely a product of discoveries in basic sciences, and it is therefore expected that an engineering college will flourish best in a place where there is an atmosphere of higher study and research in science. As it is coming to be generally recognised that an engineer should also be an educated person, informed in the humanities, business administration, industrial relations, and labour conditions. an engineering college, in order that such courses may be available, should be located in a university campus.

Fortunately in the newer universities, engineering colleges are being so located. This certainly ensures a closer contact between engineering, arts, science and social studies. In this connection we can learn from the example of America where the most successful schools and colleges of engineering are integral parts of universities. Of those which have a separate existence only a few have prospered, and most of those have come to approximate to universities in their educational attitudes and programmes.

This need for close relationship of engineering college and university is not generally admitted in this country where, owing to the fact that the engineering profession grew out of the craftman's job, the older engineering colleges were located, as in the case of Roorkee and Poona, in places rather remote from university centres. As far as Poona is concerned, the mistake is being rectified as Poona is now the centre of a new university. Even Guindy and Sibpur are a bit away from university centres, as they are located in suburbs.

37. *The example of M.I.T.*—There is a view that higher technical training should be segregated from other branches of higher education, and that the existing technical institutions should be raised to the status of independent universities through retaining their character as purely technical institutions. This appears to us a retrograde move. The authors of this idea cite the case of the Massachusetts Institute of Technology in America, and the Technische Hochschules in Germany. But it is not generally known that the former has continued as an autonomous technological institution, not by choice, but by necessity.

It started as a Land Grant College in 1859 (and still is one), the object of which was to provide instruction in agricultural practices and mechanical arts. Its governing body, feeling that it was producing technical men who were sometimes narrow-minded specialists, undertook

to unite it with the Harvard University. The Governing Bodies of both institutions agreed to such a course. Had the union taken place, the Massachusetts Institute of Technology would have become the engineering department of Harvard. In spite of willingness on both sides, the union was prevented by the fact that some of the large endowment funds were given on condition that the Institute remained a separate institution. The Governing Body took the matter to the Court to try to have the institution relieved from this limitation, but the Court held that the endowment conditions prohibited the merger. Thereupon the Institute moved from Boston to Cambridge, not far from the Harvard Campus, and also began to broaden the scope of its courses beyond those of a stereotyped engineering school. Large departments of fundamental sciences, and courses in humanities and social sciences, have been added so that it may be possible to give the ' Engineer ' or the ' Technologist ' a very broad based education, and also keep him in touch with living progress in the fundamental sciences.

The advantage of association with a university is that it enables the staff in engineering to be supplemented by faculty members in science, business and general education ; and this is usually borne in mind in the U. S. A.

A number of examples may also be given where a technical school had not progressed because it has remained a technical school in the narrowest sense of the word. A number of technical schools in the U. S. A., built and started some time earlier, and some almost simultaneously with the Massachusetts Institute failed to keep pace with its standards because men who shape their policy wanted to keep these schools chiefly technical ; while the Massachusetts Institute alumni had a lead because of their courses in arts, science, business administration and social studies.

A few years ago a group of industrial scientists decided that there was need for a High Grade Institute of Technology in Chicago. They did not try to accomplish this by building up the existing independent Technical Institute there. They created a new Technical Institute as a Department of North-Western University. It is the general impression that a considerable number of engineering and technical schools, which are not associated with universities, have steadily lost ground. Names of some institutions which were prominent in the field of engineering fifty years ago are now seldom heard.

It is our belief that the relatively slow progress of engineering studies in this country is not due entirely to foreign rule, but also to the loose liaison between engineering colleges and universities.

XIII.—Administration of Engineering and Technological Institutions.

38. *Different Types of Administration.*—The efficiency of an institution depends to a large extent on its administration. Our engineering colleges can be divided into the following classes :—

(*a*) Colleges administered by Governments, but affiliated to Universities, e.g. Guindy, Poona, Sibpur.

(*b*) Colleges which are integral parts of Universities e.g. colleges at Banaras, Aligarh, Annamalai.

(*c*) Colleges which are directly under the Government, and not affiliated to any University, e.g. Thomason College at Roorkee.

(*d*) Autonomous Colleges independent of Universities and Governments and run by Societies, e.g. the College of Engineering and Technology, at Jadavpur, Calcutta.

The older engineering colleges of Sibpur, Guindy and Poona are Government Colleges, under some Department of Government (Ministry of Education or Public Works.) The teachers are all Government servants and are directly appointed by the Government, though now the practice is to have the selection made through the Public Services Commission.

39. *Recommendations of the Calcutta University Commission.*—The Calcutta University Commission examined critically the administration of the Bengal Engineering College at Sibpur. They reported that the ' Governing Body ', because of severe limitations to its powers, was really only a Committee of Management. The memorandum submitted to us by the Bengal Engineering College shows that this is still the case. The curriculum is fixed by the Faculty of Engineering of the University, which consists of a few members of the staff and a few outsiders, mostly eminent engineers and industrialists.

The Principal of the College generally represents the Faculty on the Syndicate. Effect is expected to be given to the curriculum by the staff of the college, on whose appointment the university has no voice. There was thus and is still a *triarchy* in these engineering colleges consisting of the Government, the University, and the Staff of the College. The responsibility has been divided and conditions are far from satisfactory. The Calcutta University Commission recommended that the Sibpur College should be made a constituent college of the Calcutta University. We quote from their report.

[1] (See Calcutta University Commission Report Vol. III. Chapter XXIV, page 82.)

"*Relations of the Bengal Engineering College at Sibpur with the Calcutta University.*

The college should be a constituent college of the University of Calcutta and as such would have representation on the Court and the Academic Council. The Faculty of Engineering would be composed of the principal teachers of the college together with a certain number of experts in engineering ; and the Academic Council would also include, besides teachers of engineering, a certain number of external experts in engineering. It is probable that some at any rate, if not all of these experts would also serve on the Governing Body of the Sibpur College.

The conditions for degrees, diplomas and other distinctions within the purview of the Faculty would be regulated by the Faculty, subject to the control of the Academic Council, and in the case of more important matters, by ordinance.

It is to be remembered that, unlike the present Senate, the Academic Council will be constituted almost entirely of teachers, together with experts in certain professional subjects ; and apart from questions affecting general University policy, each Faculty will in effect manage its own affairs. It is mainly in regard to such matters as entrance qualifications and the total length of the university course that the Academic Council may be expected to stipulate that the requirements of a particular Faculty shall not fall below the minimum. In other matters each Faculty should have great freedom to regulate its own course and requirements for examinations.

We believe that the scheme that we propose will lead to harmonious working between the Engineering College and the University, and that the connexion will be beneficial to both ; to the college because of the prestige which it will gain from the opportunities offered to its students to obtain university degrees and because of the contact of its teachers with teachers in the allied subjects of chemistry, physics, geology, and mathematics ; to the university, reciprocally, because of the variety given to its studies, and of the breadth of view gained in discussions affecting university policy as a whole by the representation of engineering interests."

These recommendations were not carried out. Besides, in spite of repeated popular demands no action was taken by the Bengal Government to improve the conditions of teaching and equipment, and to introduce fresh courses such as mechanical engineering and electrical engineering, for which Calcutta was eminently suitable. As we mentioned earlier, mechanical engineering classes were added in 1931-32, *fourteen years after Banaras had organised them,*

the electrical engineering classes in 1935-36, and the metallurgical classes in 1939-40. The equipment and staff were inadequate until recently. The number of volumes in the Bengal Engineering College Library in 1917, when the Calcutta University Commission reported, was 10,000 and according to a memorandum submitted to us in 1949 it was only 16,000 even though three more fields of study were added.

The report of the 1945 Committee does not include any recommendation about the administration of the College. We think that the Bengal Engineering College should be a constituent college of the University and thus its work be knit into closer liaison with that of the University. Similarly the Poona and Guindy Colleges should be constituent colleges of the Universities of Poona and Madras, in the sense indicated in chap. XIII of our report.

40. *University Engineering Colleges.*—Many of the new Universities and technical institutions, such as Banaras, Aligarh and Annamalai, have engineering colleges under University control and management. This arrangement has worked out satisfactorily as far as administration is concerned.

We have a number of colleges—both Engineering and " technical subjects "—founded by independent organisations. For example, the college of engineering and technology founded at Jadavpur, Calcutta, by the Bengal Council of National Education about 1912, has been managed with a small recurring income derived from endowments. For a long time the professors were paid only subsistence wages, yet this institution has done very valuable work and developed a variety of courses.

41. *Control of Engineering and Technological Education.*—The British Technological Education Committee laid down the following general principles for the guidance of British universities and other engineering and technical colleges :

(*a*) They should be so organised as to provide for a considerable number of residential students.

(*b*) In Government they should continue to be subject to the ultimate control of the providing local authority in matters of finance and general policy, but it is essential that each should have *its own Governing body* containing adequate representation of industry ; and a Board of Studies, representing its teaching staff, which should be responsible for academic policy. This constitution should, we think, be defined by a scheme approved by the Minister of Education, which would give the College the greatest possible degree of the self-government and responsibility.

(*c*) In finance they should be specially assisted by the national exchequer, as performing a national rather than a local function. We suggest that the providing authority should receive a substantially higher rate of grant in respect of revenue expenditure attributable to this function, and that the national exchequer should consider giving special assistance also by capital grants, in the same way as is now contemplated for universities.

(*d*) The salaries and conditions of service of comparable teaching staffs should be similar to those of university teachers, and superannuation arrangments should be adapted to secure the greatest possible freedom of movement between colleges and universities. Subject, perhaps, to some special interpretations, the report of the Burnham Committee seems to provide a sufficient basis for this, as regards salaries ; but we hope that there will be a suitable revision of regulations as to hours of teaching and the like, which at present tend seriously to restrict the freedom of full-time teachers to promote the study of their subjects by tutorial activities and research, as well as by formal instruction.

(*e*) They should so far as possible *be relieved of elementary teaching duties.*

42. *Need for a Standing Advisory Panel of Engineers and Technologists.*—The rise of a large number of engineering colleges brought to the forefront questions of standards and coordination, for most colleges will have to depend on provincial and central governments for financial support.

The question is already acute in the Madras Presidency, where six colleges of science and technology have sprung up within the last 4 years in addition to the old college at Guindy. The Madras Government appointed a Standing Advisory Board for Technical Education, June 1948, to suggest measures to increase the efficiency of technological education in the Presidency. They recommended that post-graduate courses of a year's duration leading to M.Sc. degrees in the universities may be started and allotted to the colleges, as given below, when the demand may arise and research staffs are found :

(1) GUINDY COLLEGE—(*a*) Public Health, (*b*) Highways, (*c*) Tele-Communication, (*d*) Production Engineering, (*e*) Irrigation, (*f*) Reinforced concrete, (*g*) Aeronautics, (*h*) Railway Engineering and Mechanical Transport and (*i*) Mining and Metallurgy.

(2) VIZAG COLLEGE.—(*a*) Highways, (*b*) Public Health, (*c*) Irrigation, (*d*) Naval Architecture and Marine Engineering, (*e*) Production Engineering, (*f*) Reinforced concrete, (*g*) Aeronautics, (*h*) Railway Engineering and Mechanical Transport, (*i*) Mining and Metallurgy.

(3) COIMBATORE COLLEGE.—(*a*) Textiles, (*b*) Automobile Engineering, (*c*) Production Engineering, (*d*) Aeronautics, (*e*) Railway Engineering and Mechanical Transport.

(4) ANANTAPUR COLLEGE.—(*a*) Mining and Metallurgy, (*b*) Irrigation, (*c*) Aeronautics.

(5) ANNAMALAI UNIVERSITY.—(*a*) Irrigation, (*b*) Reinforced concrete, (*c*) Highway Engineering.

Probably a similar committee of co-ordination will have soon to be set up in the Bombay Presidency, where in addition to the two existing colleges at Poona and Bombay, four more engineering colleges have been started at Sangli, Ahmedabad, Anand, and Baroda. The same is true of United Provinces, where we have the Roorkee College and two Engineering Colleges at Banaras and Aligarh, and a number of technological institutes at Kanpur. According to our general recommendations the provincial institutions will have to depend on their respective governments for complete financial support for the degree course. But if post-graduate training and research are to be encouraged in some of the selected colleges, as we think to be extremely necessary, the finance should come at least partly from the Centre. Of course the costs of the Higher Technical Institutes, both for undergraduate and post-graduate courses, have to be borne by the Central Government, as they are Central Institutes.[1]

The distribution of government funds should be done through the University Grants Commission, which will be assisted by an Advisory Panel of Experts. This Panel will have to advise the Commission on :—

(*a*) the needs of the country for technical and engineering personnel, by periodic surveys of industry, and other institutions;

(*b*) on the initiation of post-graduate training and research at different centres;

(*c*) on any other matter referred to them by the Central University Grants Commission.

The Advisory Panel of Engineers and Technologists should consist of representatives of different branches of engineering and technology and constituted on the lines suggested in Chapter XIII.

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[1] The Scientific Man-power Committee gives the following estimates of expenditure for the next 5-10 years programme, for expansion of Chemical and Technological Education :

Capital 21 crores; Recurring 3·39 crores of these a capital of 7·73 crores, and a recurring sum of 1·83 crores may be available from the provincial and other sources. The Centre will have to provide a capital of 13·37 crores, and a recurring grant of 1·50 crores per year.

XIV.—Concluding Remarks and Recommendations.

43. *General Observations.*—We have surveyed the engineering and technological institutes of this country giving first degrees or diplomas equivalent to degrees as regards their equipment, staff, intake and output of students, and courses of study. We find that in most cases the equipment is insufficient, the staff small and underpaid, and the courses of study too few and stereotyped. The yearly output of engineers is too small in comparison to the demands of the country, growing out of the various schemes of industrialisation and development undertaken by the Government. It is 1/40 of that of U.S.A., and 1/3 that of England. Post-graduate training and research are virtually non-existent, and the present system is incapable of producing engineer scientists, or design and development engineers who can plan and execute large schemes.

44. *Recommendations.*—With a view to improving the quality and quantity of different classes of engineers and technologists we make the following recommendations :

(1) that the existing engineering and technological institutes of the country, whatever be their origin or method of administration, should be regarded as national assets, and steps should be taken to improve their usefulness according to the recommendations of the Advisory Panel of Engineers and Technologists to be set up ;

(2) the number of engineering schools of different grades be increased particularly for training of grades 4 and 5 (foremen, craftsmen, draftsmen, overseers etc.) ;

(3) that engineering schools cover a larger number of fields and branches of engineering to meet the increasingly varied needs of the country. If there is unemployment among competent engineers it is because too many are trained in some phases of engineering and too few in others ;

(4) that engineering courses of study include general education and basic physical and engineering sciences, probably fewer applied courses, and toward the end of the course specialisation in some specific field. The first year or more of each course should in general be common to all branches of engineering ;

(5) that, as effective engineering education requires works practice along with academic study, this be secured as work during vacations or as post-graduate works training, or as participation in work and study programme during the under-graduate years ;

(6) that wherever possible, the existing engineering and technological colleges be upgraded for post-graduate

training and research in selected subjects. This requires a class of teachers with different upbringing, habits, and service conditions than the present staffs ; hence it may not always be possible to upgrade the present institutes ;

(7) that steps be taken to start without delay the higher technological institutes as recommended by the Higher Technological Education Committee, for training much needed engineer-scientists and design and development engineers ;

(8) that inquiries be made of possibilities for training for graduate engineers and engineer scientists as employees in American industries and other institutions, so that practical "know how" may be quickly secured for India's industries ;

(9) that in establishing new engineering colleges or institutes there be fresh, critical inquiry as to the types of engineering service needed in India. Uncritical repetition and imitation of existing institutions here and abroad should be avoided. Especially consideration should be given to training which will prepare students to become competent and self-reliant, who will have the initiative and courage to start new industries, even if on a very small scale, to the end that there shall be many sources of initiative and responsibility in India, and that a top-heavy economic bureaucracy may not be necessary ;

(10) that engineering colleges be not controlled or dominated in their administration by ministries or other government departments. They should be closely associated with universities, and appointments should be made in the manner indicated elsewhere in this report ; or if made by the engineering department or college, with the approval and active participation of the university administration, where the relationship makes that desirable ;

(11) that Faculties of Engineering be called "Faculties of Engineering and Technology" and should include teachers representing different branches of engineering and technology, a few scientists, teachers of humanities and commerce, and a number of practising engineers and technologists ;

(12) that the proposed Central Universities Grants Commission be helped by a Standing Advisory Panel for Engineering and Technology, as the fulfilment of the programme of Engineering and Technical Education, as visualized by us, will require large grants from the Centre.

E.—LAW.

1. Introduction. 2. Our Changed Position. 3. The Present Situation in our Law Colleges. 4. The Nature of Legal Studies. 5. The Pre-legal Degree Course. 6. The Degree Courses in Law. 7. Recommendations.

1. *Introduction.*—In Europe and America, legal education has long occupied a high niche among the learned curricula. Products of the study of law have frequently risen to positions of distinction in public service or have amassed fortunes in the private practice of law or have acquired wide reputation as scholars without even entering practice. Legal education is on an elevated plane and teachers of law enjoy a high respect, perhaps as high or higher than those of any other field of instruction. The names of Dicey, Pollock, Anson, Maine and Holdsworth of Oxford, as examples, are known wherever there is knowledge of law and jurisprudence. The same might be said of men like Roscoe Pound of Harvard University in America.

In our country, we have many eminent practitioners and excellent judges. Some of these appeared before us as witnesses and made valuable comments and suggestions concerning the improvement of legal education. The law has also given us great leaders and men consecrated to public service. Most conspicuous of these is Gandhiji. Here the comparison ends. We have no internationally known expounders of jurisprudence and legal studies. Our colleges of law do not hold a place of high esteem either at home or abroad nor has law become an area of profound scholarship and enlightened research. This is probably no reflection upon us as it arose from conditions inherent in our position as a dependent nation. There were eminent legal scholars in our ancient universities, and faculties of law were among the first established in the early modern universities at Calcutta, Bombay and Madras. The opportunity, however, for original, stimulating study of law hardly existed ; certainly no demand was created for it while the burden of Government, public service and legal transactions were carried by others.

Most of our universities set up their colleges of law but they readily succumbed to the general policy of using the universities as training grounds for government service, and, because the important areas of legal study and practice were occupied by English lawyers and English law—for the most part in the larger cities—there was little possibility of employment for our young men, except in clerical, minor or routine legal services. The amazing fact is that we now have

so many able practitioners and well qualified judges, rather than that there is a scarcity of gifted legal scholars and researchers.

2. *Our Changed Position.*—With the attainment of independence and the consequent responsibility of developing our own constitutional government, together with international relations, now as important as domestic affairs, it becomes imperative that we develop high grade colleges of law, manned with real scholars, and capable of producing men who can cope with international, constitutional and administrative problems, as well as with the civil, criminal and routine demands which exist. Our gifts for philosophical studies would indicate that it is possible to have as great students of systematic law and the principles of jurisprudence as any other people.

3. *The Present Situation in our Law Colleges.*—In the light of what we have said, it is not strange that we have found conditions in law colleges generally at a low ebb. At one or two universities, the authorities said their situation was satisfactory but the majority admitted the contrary and confessed that improvements were needed.

There should be no need for alarm and discouragement. Conditions have not permitted the development of great colleges of law in the immediate past. Such as we have exist largely on a basis of convenience and opportunism and are secondary to other Faculties and studies, with the inevitable consequence of indifferent or poor spirit. The deficiencies are apparent for the most part and devices for improvement are not far to seek nor matters of real debate.

There is little uniformity in present practices. Law courses are now post-intermediate and post-graduate ; there is no sound policy of recruitment of teachers—occasionally there are well-paid, highly qualified, full-time professors—but all too often the staff is burdened with young inexperienced men serving their apprenticeship at the Bar, who undertake to teach in law colleges part-time in order to supplement their meagre income and who have no real abiding interest in teaching. When there are outside calls some of them often do not appear for lectures. As a rule law lectures are not scheduled in the regular hours on the time-table ; they are fixed in the early morning or evening, when they do not conflict with other things regarded as more important. Again, law has not been whole-heartedly pursued as a single subject of study, is usually a subsidiary course while major effort is being directed to a master's or some other non-legal degree. Obviously, we now need to re-organise our law colleges and give emphasis to this subject second to none. India's prominence and importance among independent nations and the realisation of our national aims demand such a course of action.

4. *The Nature of Legal Studies.*—In the range of subjects studied in our universities there are some like Mathematics and Philosophy which are studied for their value as cultural disciplines ; others like Medicine and Engineering have a definite vocational end in view. Law stands midway between these two groups. There are some who take Law as part of a liberal education ; others because they wish to enter the legal profession after graduation. Many who would enter public services, international organisations or business concerns would like to read Law at the universities.

Some of our witnesses suggested and there exist, in some places, two types of courses, one designed for the production of legal scholars and another for those who will practise law as a profession. Some even think that it is not the function of the law college to produce practitioners, that the aim of a university course in law should not be a vocational one, that this is a responsibility which should be discharged otherwise. Among English universities, Oxford offers both a Bachelor of Arts degree in Jurisprudence, a scholarly pursuit of legal study, and a Bachelor of Civil Law degree, designed more for professional development. Oxford, however, is unique among universities in this plan. Again, in England, there are organizations of practitioners, such as the Inns of Court, prepared to develop and qualify men for admission to the Bar. Such organizations do not exist here or in the United States.

Under all the circumstances, we think we would do well to concentrate on a single degree course leading to a bachelor's degree which, with some variation, can serve the dual function of producing both scholars and lawyers. This policy has been pursued successfully by all law colleges in America. There should be increased study and research on the post-graduate level. This is now a conspicuous weakness, already adverted to ; we must stimulate a wider and deeper study of basic law and principles. For this purpose, we would suggest a two-year post-graduate course, leading to a Master's degree and, eventually, when we are able to provide it, an earned Doctorate in law for which intensive research in one field shall be required.

There is fairly general agreement among those who have given real study to legal education that there should be two periods in the process. First, a rather long period of pre-legal or general education, in which the student must acquire a thorough grasp of important areas of knowledge, as a base upon which to build his more technical studies. Second, he must concentrate in the body of materials and the methods of the several branches of the law itself.

We think that a degree course either in Arts or Science should be pre-requisite and that this should be followed by three years of study for the Bachelor of Laws, the last year being given over to practical applications, such as reading in advocates' chambers and acquiring the art and familiarity with court room procedures, and the like.

Our suggestions here are in accord with much testimony and good authority as well as experience. They are similar to the conclusions reached by the Calcutta University Commission[1] and are exemplified in the Law Schools of the United States.

5. *The Pre-legal Degree Course.*—A few of our witnesses and others regard the pre-legal course in general education as unnecessary. We are definitely and strongly of a contrary opinion. A favourite argument of those opposing pre-professional general education is : " Look at Abraham Lincoln ! He became a great lawyer and statesman without even going to college ". Any tyro can see the fallacy in this argument. The question is not whether men of superior talent and industry can equal or surpass the average man who has more advantages. What we wish to know is how the average man can find the best preparation and enjoy the most reasonable expectation of success in the study and practice of law. The volume of evidence and experience indicates that a broad general education followed by thorough training in scientific legal study and techniques offers the best hope of success. The minimum requirement of pre-legal training of the American Bar Association and the American Association of Law Schools is two years of college work but the best colleges of law including Harvard, Columbia, Michigan, Chicago, California and others require completion of a four-year degree course in Arts and Science before admission to the law courses.

There has been much debate regarding the exact studies which should be pursued in the general education course but we cannot enter into this here. Suffice it to say, after much experimentation, no positive correlation has been established between preliminary training in any special group of subjects and success in law. The value of some general studies, such as language, logic, government and economics for the purposes of the lawyer are obvious but experience has shown that law is so comprehensive that almost any subject of study may become not only desirable but necessary. Any important subject of legal study or litigation is likely to involve several technical fields of knowledge. For example, the Dairy industry, a two billion dollar annual business in the U.S.A., is threatened by the competition of Oleomargarine made from cotton seed.

[1] Volume V. Chapter XLV of Calcutta University Commission Report.

The Dairy industry contends Oleomargarine is injurious to health. Its exponents say it is more nutritious than butter. Knowledge of chemistry is fundamental in this case ; important questions of economics enter in ; the relation of the powers of the States and the Federal Government which are delicate matters of constitutional law are involved ; and so on. It is clear that law, its fundamentals and its applications are enmeshed in the whole warp and woof of human knowledge and experience. The lawyer, unacquainted at least with the major areas of knowledge and their practical bearing on technical questions of law, is now almost without hope of success and is certainly greatly handicapped. Therefore, we feel that the lawyer should have as wide preliminary training as possible but no set programme of studies. There should be variable groups of studies adapted to those who may expect to enter special fields of law such as Commercial Law, for example ; but in general the Arts and Sciences should comprise the central core of the curriculum.

6. *The Degree Courses in Law.*—We do not think that a set curriculum of studies can be offered throughout India for the degree course in Law. We have suggested a course of three years' duration with emphasis in the last year on practical phases. The subjects could be made more uniform than at present but they should be applicable to the variations that arise from differences in special acts, customs and other factors in the several Provinces and States.

We believe that Roman Law, basic to practically all modern systems and the most complete and systematic body of law ever developed, should have a place. Essentially, all acknowledged branches of law now in use must be taught ; contracts, torts, criminal and civil law and procedures, land tenure, transfer of property, etc. Familiarity, if not mastery, must be acquired of the two indigenous systems of Hindu and Muslim law which are monuments of systematised common sense ; some knowledge of English common law and equity is important.

We think that more attention must now be given to Constitutional Law, International Law, Legal History and the fundamentals of Jurisprudence.

It is important that, whatever subjects may be offered, the student should acquire the powers of clear thinking, accurate analysis, and cogent expression. Without these qualities, he cannot hope for success as an attorney.

The courses now are confined too much to lectures. We think these should be supplemented with tutorials, seminars, Moot-Courts and something of the case-method, made world-renowned at Harvard.

The Moot-Courts must be under the supervision of a specially selected and equipped member of the staff. Unless carefully prepared and directed Moot-Courts do not have much value. We suggest tests of progress and compartmentalization of examinations both time and subject-wise.

For the Master's degree, advanced courses may be offered in the fields of special interest to the candidate and strong programmes in Constitutional, International, Administrative Law, Jurisprudence and both Hindu and Muslim Law should be available. At the completion of the two years, written papers and Viva-Voce examination should be required together with an acceptable thesis. For the encouragement of research, fellowships should be available in law as in other fields. Intensive and original investigation in an important area should be essential for the Doctorate, if and when offered.

7. *Recommendations*: We recommend :

(1) that our law colleges be thoroughly re-organised ;

(2) that the staff of the law Faculties be recruited and controlled by the universities in a fashion similar to Arts and Science Faculties ;

(3) that a three-year degree course in pre-legal and general studies be required for admission to law courses ;

(4) that a three-year degree course be offered in special legal subjects, the last year to be given over largely to practical work, such as apprenticeship in advocates' chambers ;

(5) that the staff shall be whole-time and part-time. The whole-time staff should teach largely in the fields of fundamental subjects and the part-time staff more largely in the fields of practical application and procedures. Part-time staff members should be recruited on a contract basis and paid only if full services are performed ;

(6) that law classes be scheduled only during the regular hours of teaching ;

(7) that students pursuing degree courses in law shall not be permitted to carry other degree courses simultaneously except in a few instances where advanced students have proved their interest and are studying related subjects in law and some other fields.

(8) that opportunities for research be available in every law faculty, particularly in Constitutional Law, International Law, Administrative Law, Jurisprudence and our systems of Hindu and Muslim Law.

(9) that progress tests be introduced and examinations be by compartments both time and subject-wise.

F.—Medicine

I.—Medical Schools and Colleges.

1. Beginnings of Modern Medical Education. 2. Degree Courses. 3. Recognition by the General Medical Council. 4. The Establishment of the Indian Medical Council. 5. Increase of Numbers. 6. Resident Appointment. 7. Numbers and Equipment. 8. Hospital Facilities. 9. Staffing.

II.—Rural Medical Relief.

10. Rural Training for Medical Students : Undergraduate Stage. 11. Graduate Stage.

III.—Post-Graduate Training.

12. Post-graduate Qualifications. 13. Recommendations of the Madras Conference.

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14. Public Health Engineering. 15. Nursing.

V.—Indigenous Systems of Medicine.

16. Ayurveda and Unani ; Their Strength. 17. Their Weakness. 18. Interaction of the Indian and Western Systems. 19. History of Medicine Course.

VI.—20. Recommendations:

I. Medical Schools and Colleges.

1. *Beginnings of Modern Medical Education.*—Medical colleges have been in existence in India for over a hundred years. In fact, it may be stated that even before the universities were instituted in 1857, colleges of medicine granting what were called degrees were existent in the three principal centres, Calcutta, Madras and Bombay. The bulk of the practitioners trained in Medicine, however, went through medical schools which were established in different parts of the country. Some of the schools were maintained by the State, while others were under the control of private agencies, largely missionary. The school course was intended to train a set of practitioners who would function as Assistants and would have no individual responsibility in the treatment of any of the major complaints. Thus was created a set of what was once called the Hospital Assistants, later known as Sub-Assistants, who were given training for a shorter period of four years, and whose training was restricted to certain subjects of clinical interest only. Certain of the laboratory subjects and certain of the clinical scientific subjects of study were not included in the course.

Later, however, the medical schools revised their syllabuses and gradually tried to improve on them to bring them into conformity, as far as possible, with the subjects that were studied in the medical colleges.

There were other grades of training for the profession of medicine of an acceptedly lower standard than the degree standard for recruitment for the subordinate personnel of the Army. The Indian Subordinate Medical Department was recruited largely from candidates who had this type of training either in the schools which were established separately or in the colleges where the collegiate diploma was granted to these students generally after a four-year period of study.

It may also be stated that the entrance qualification for those who were admitted to the diplomas granted through the schools or through the colleges was of a lower standard than that required by the university. In the schools the standard was generally that of the matriculation, while in the colleges the standard varied and an entrance test was considered sufficient to recruit these candidates whether they had completed the matriculation or not.

2. *Degree Courses.*—Even in regard to the degree course, some of the Indian universities had two different grades, the L. M. S. and the M. B. B. S. Although the entrance qualification for both was the same, there were differences either in the period of study or in the actual standards required at examination.

Thus, a variety of qualifications was prescribed for entrance to the medical profession, the diploma of the school, known as L. M. P. and D. M. S. later, the diploma of the college given to persons who were called Military Assistant Surgeons, the L. M. S. degree and the M. B. C. M. degree awarded by the universities. The school course of four years was extended to five years in Madras, and those who qualified after five years' training with practically all the subjects which were included in the degree course syllabus were awarded the diploma of D. M. S.

It was felt somewhat anomalous that there should be two standards in a degree for the same professional qualification. Therefore the universities abolished the L. M. & S. degree gradually, the last to do so being the Madras University, which abolished the L. M. & S. in 1926. The degree of M. B. & C. M., which was an anomalous title in that it corresponded to a similar nomenclature in British universities was changed to M. B. & B. S. Many of the provinces have now abolished the medical schools and now recognise only one qualification, namely, the degree standard as the entrance to the medical profession. The first to abolish the diploma was the Madras Province, followed later by the United Provinces, and at present most of the provinces have already abolished or are rapidly abolishing the school course and the diploma qualification awarded through the schools.

3. *Recognition by the General Medical Council.*—For many years, the degrees awarded by the universities in India were recognised as sufficient for the holders of such degrees as qualifying for practice anywhere in the Commonwealth, and they were entered in the General Medical Register. In 1921, however, the General Medical Council decided that such qualifications should not be automatically recognised and that an inspection of the Indian universities was necessary to ascertain whether they were conforming to the minimum standard needed by the General Medical Council for such recognition. The main defect that was stressed was that there was little or no practical training in the field of Obstetrics in certain university centres. It may be stated in this connection that even in British universities the standard of practical training in midwifery varied in the different universities, and not all of them were in a position to conform to the minimum standard laid down by the General Medical Council. However, as a result of the inspection, the universities made special efforts to get their own students trained at centres and in institutions where such facilities were available.

4. *The Establishment of the Indian Medical Council.*—The periodic inspection by the General Medical Council was resented by Indian universities. Owing to a long-drawn-out controversy, between the General Medical Council and the universities in India, the Indian Medical Council was established in the year 1931 with the object of laying down minimum standards for qualification and teaching, and on the whole, it would appear to the Commission that the Medical Council has in a measure succeeded in enabling the universities to fulfil their duties in regard to the minimum standards that ought to be expected for those obtaining degrees in Medicine. The Commission is, however, uneasy at some of the developments in the field of medical education within the last three or four years. It is a step in the right direction, which the Commission welcomes, which most Provinces have undertaken, namely, to have one uniform standard for medical education and to abolish the qualification of licentiates which was hitherto given through Government examining Boards.

5. *Increase of Numbers.*—While welcoming this change, the Commission wish to state that in converting the medical schools into colleges, there has been a little haphazard attempt at the maintenance of standards in some cases. The Commission is most anxious that in an important subject like Medicine, the universities should be zealous of maintaining the standards and would impress upon the universities and the Governments of the Provinces concerned, the need for enforcing such standards and for giving adequate financial assistance to the colleges concerned to come up to

the minimum standard of efficiency. It would appear to the Commission that the Indian Medical Council may also take a more definite stand in this matter and in spite of obvious difficulties insist upon the authorities concerned rigid adherence to the standards which have been laid down by the Council itself.

One other aspect of the question deserves consideration. The demand for medical education has increased considerably with an increase in the number of persons entering the portals of the university. Such a demand can only be met by increasing the number of medical colleges. It is well-known that the establishment of a medical college is by no means an easy matter. Apart from the financial implications, the question of securing properly trained and experienced personnel is of fundamental importance. Some of the Provinces have increased the number of students admitted to medical colleges to sometimes double the number with the result that the training that is imparted to such alumni with inadequate staff can hardly be said to meet the minimum standards required. The Commission is not aware of any positive steps taken by the Indian Medical Council to rectify these serious defects. It would hurt all standards if such increased admissions are allowed to medical colleges which have neither the personnel nor the clinical or laboratory facilities to cope with the increased numbers.

The Commission would in this connection refer to the reports of the Goodenough Committee in England and the Health Committee in India under the Chairmanship of Sir Joseph Bhore and suggest to the universities and to the Indian Medical Council in particular that they should limit the number of admissions in any medical college to a maximum of 100, provided the conditions laid down in these reports are satisfactorily fulfilled. The Commission realises that there is great danger to medical education if immediate steps are not taken in this direction.

6. *Resident Appointment.*—The medical colleges in India vary in their size and in the facilities they afford for under-graduate and post-graduate training. The ideal medical college should be capable of providing the student with the whole of his medical education from the time of his entering the school until he is qualified, after which a resident post should be found for him either in his own college or in approved hospitals before he goes into practice. The bulk of expert opinion is now in favour of the position that a resident appointment for at least a year or 15 months should be considered as a *sine qua non* to adequate training for a graduate before he enters

the profession and is permitted to practise. We consider it as one of the responsibilities of the medical school which gives him the training that such facilities should be made available to the candidate.

7. *Numbers and Equipment.*—Even as regards equipment of medical colleges, there are variations in the different medical colleges, and it is desirable that in view of a rapid expansion of medical colleges and the conversion of medical schools into colleges certain essential considerations should be borne in mind by the managements. It has been brought out that number of students admitted per year to a medical college should be controlled, and it has been suggested by expert committees that 50 admissions a year should be considered the minimum, that 60 to 70 should be the optimum, and that normally not more than 100 students should be admitted, this being considered the maximum capacity of any medical college. We place emphasis on these principles, because in a professional subject like Medicine, where practical training is of importance and close touch of the professional element with the student population is of vital importance in the hospitals and the laboratories. Excessive numbers admitted definitely lead to deterioration of standards, and make it exceedingly difficult for adequate supervised training to be given. In all medical colleges there should be an adequate number of large and small lecture rooms, halls, laboratories, preparation rooms, library and reading rooms, common rooms, and departments of research with special facilities. In our experience some of the colleges are lacking in these essential prerequisites. Museums including a Radiological Museum should be readily accessible to all students, and should contain sections specially arranged for teaching purposes. Means both for taking and showing cinema films to the students should also be provided.

8. *Hospital Facilities.*—As regards hospital accommodation, there has been a somewhat haphazard development of hospital facilities. We agree with the view that has been expressed that it is most desirable from the point of view of the students and the time that will be saved as well as the physical exertion that will be avoided, that all the departments of study which require hospital facilities should be located in a single campus. This will not only help the student but it also will facilitate research work that may be undertaken by the staff, as it will lead to possible consultation with the members of the staff of the different departments, while the advantage to the patients concerned will be obvious in that consultation would be more easy and would be greatly facilitated.

The question of the number of beds that should be required has received some attention, but we believe that in several of the medical colleges, particularly those that have been recently started or converted, the bed-strength is far from the necessary minimum that has been recommended. Expert opinion has it that there should be ten beds per student admitted to a college and that half this number of beds should be general medical and surgical in equal proportions, the other half being for the specialities which have to be provided for within the area of the teaching centre.

9. *Staffing.*—Apart from all these factors which we hope the Indian Medical Council will enforce through its inspection commission, we have to take note of the staffing of the medical colleges and hospitals. There are three types of teachers who may be employed: The Heads of Departments in charge of Units—These should be men who have had considerable experience in teaching and should be full-time Professors in charge of these Units—Medicine, Surgery and Midwifery. We hold that the organization of teaching and the promotion of cooperation and collaboration between the different teachers is so essential a feature of successful teaching that unless there be a full-time head of a department, it is not possible to produce those conditions that would be conducive to the right type of cooperation and coordination and emphasis on teaching. Besides these full-time teachers there should be some part-time clinical teachers. It has been noticed that in several Provinces, honorary medical officers have been given some responsibility in regard to clinical teaching. We consider that this is a system that ought to be encouraged and that such honorary medical officers should, if they are well-qualified and prove themselves satisfactory to be recruited as teachers, be given opportunities of being part-time clinical teachers in the hospitals. They must devote an adequate part of their time to teaching and it is perhaps desirable that they should receive remuneration for the carrying out of such duties.

So far as teaching work is concerned all members engaged in teaching, whether as full-time or part-time, must conform to the duties apportioned to them, must work in cooperation with the heads of the departments concerned and with the Dean or Principal of the college. We believe that the recruitment of properly qualified personnel to hold full-time appointments in medical colleges requires careful consideration. It is obvious that in a profession like Medicine, there are undoubtedly prizes available to the best equipped and persons with talent and a successful practice will not generally be available for such full-time duties. We do not consider it desirable that such full-time duties should either be entrusted to persons who are

about to retire. It seems to us that a Professor appointed for a full-time job must have at least 5 to 10 years of work to look ahead. We therefore feel that the proper age to select such persons would be about 40 to 45. It has been suggested that to attract the type of people, there should be adequate scales of pay. We have recommended that the scales of salaries proposed for university teachers be adapted for teachers of professional colleges also who may in addition be granted a personal allowance not exceeding Rs. 500 per month. This would avoid separate scales of pay for different Professors in the same university which may result in anomalies.

II.—Rural Medical Relief.

10. *Rural Training for Medical Students : Under-graduate Stage.*—The vast majority of the citizens of this country live in villages, and it is here that conditions are yet primitive. The health of the villager should be the primary concern of the State and he it is that supplies the sinews of war, whether in the field of Agriculture, Industry, Commerce or in the development of the resources of the country and in other fields. The health and well-being of the villager is of paramount concern, and any scheme for the training of medical practitioners should take note thereof, for the need for a training that will adapt them and acclimatise them to the needs of the villager so that many of them will be prepared to settle down there and look after the health requirements of the rural areas. It is the hope of the Commission that with the realisation of the need for improvement in villages, better transport facilities will be available and that questions of public health, like water supply, rural medical relief and other associated problems will be taken due note of. At this stage in our consideration of medial education, however, we wish to emphasise the need for training in the problems of rural medical relief, which under-graduates and graduates should necessarily possess. The main emphasis in the training of medical students should be not on the curative side, but on preventive aspects of medicine, and for this purpose preventive medicine should have more emphasis placed in the curriculum of medical studies and that to a very large extent there should be opportunities for the under-graduate to become familiar with the problems of rural hygiene and with the methods of combating hazards to public health in rural centres. We wish to state that such rural training in medical relief and Public Health should be given at two stages. The under-graduate should, in his senior course of study, for a period earmarked, have training in rural health problems, and should be associated with a member of the Public Health staff during this period. It may be for a period from 6

weeks to 3 months, between the fourth and fifth years of study when practical training may be given to him in select rural centres where a properly integrated course of practical training will be available.

11. *Graduate Stage.*—At the same time, the newly passed out graduate should have opportunities of studying public health problems in their wider aspect. We believe the time is come when the Indian Medical Council may have to consider seriously whether it may not lay down as a condition prior to registration that any graduate passing out of the portals of the universities or any other equivalent qualification should put in a course of internship in a well-regulated hospital, which will include a course of three months of practical medical relief in rural and public health problems. We have had emphasis laid on this fact by different eminent persons that whatever may be the training given before graduation, it is after graduation when the whole concept of the field of Medicine, theoretical and practical, preventive and curative has been absorbed that a medical graduate would be in a position to improve on his theoretical knowledge and training and to learn the difficulties that beset him in actual practice of the profession, preventive or curative, whether in urban or rural areas.

There is another aspect of the question pertaining to rural medical relief and public health which we wish to emphasise. It will not be possible for adequate attention to be paid to these problems unless sufficient number of medical graduates are drawn to rural medical service. In our opinion the best time for graduates to work in the field of rural medical relief will be at an early age, when they have the enthusiasm and can stand the rigours of hard life, and we would suggest in these cases that it would be desirable both from the point of view of training and experience and from the point of view of stepping up the tackling of the problems of rural medical relief that the young under-graduate who wishes to enter Government sevice either in a paid or in an honorary capacity should be required for a definite period to serve in a rural area before being posted elsewhere. We believe that in certain of the Provinces, this question has been already raised, and special Committees appointed for this purpose have recommended this as a very desirable and necessary step to meet the needs of rural medical relief and public health.

III.—Post-graduate Training.

12. *Post-graduate Qualifications.*—Reference has been made at an earlier stage of this report to the unfortunate fact that for long post-graduate instruction was not available in the medical colleges. In recent years, there has been a great deal of effort on the part of

universities to establish post-graduate degrees and diplomas, but unfortunately the conditions that ought to be fulfilled for proper instruction of the alumni who wish to avail themselves of the opportunities of post-graduate qualifications are not available. In fact the Commission has noted with regret that universities are competing with each other in framing regulations so that the maximum number of post-graduate degrees and diplomas are available, and in many cases students are allowed to appear for these degrees or diplomas without proper facilities being available for them to get a thorough practical training before qualification ; the Commission would emphasise that it is not examinations that ought to count in professional studies but the training and the opportunities made available and the trained personnel with whom the students can come into contact. The Commission is glad to note that this subject has also attracted the attention of the universities and of the Provinces and the Government of India.

13. *Recommendations of the Madras Conference.*—The Commission were present at a recent Conference held on the 1st of January 1949 in Madras on the invitation of the Inter-University Board and the Government of India, when the Vice-Chancellors, the representatives of Medical Faculties and of the Government of India were present, to consider the whole subject of post-graduate medical education. We commend the following resolutions that were passed at this Conference to the notice of universities, Provincial Governments and the Central Government :—

"I. This Conference is of opinion that it is desirable that certain minimum standards should be observed by all universities in regard to post-graduate qualifications in the Faculty of Medicine."

"II. All-India Council of Post-Graduate Medical Education.

(i) That with a view to correlating standards and advising the universities concerned on post-graduate studies in the Faculty of Medicine, this Conference is of opinion that it is desirable to constitute an All-India Council of Post-Graduate Medical Education. Such a Council may be constituted by the Inter-University Board and should consist of specialists from teaching Faculties in Medicine and experts nominated by the Ministry of Health in the Union Government. Such a Council may consist of about seven members with power to coopt.

(ii) This Conference requests the Government of India to bear the cost of establishing and maintaining the All-India Council of Post-Graduate Medical Education and for the

purposes of inspecting and advising the universities concerned in regard to post-graduate education facilities necessary in each case."

IV.—New Subjects.

14. *Public Health Engineering.*—It is most unfortunate that certain types of education have not been encouraged under the Faculty of Medicine, the chief amongst these may be mentioned Dental Education. Public Health Engineering is another of those subjects which have received scant attention. The Commission considers that this is a very important subject and merits the immediate attention of universities. The Commission understands that the Government of India have set up a Committee to recommend the lines on which Public Health Engineering courses are to be framed, and it is the hope of the Commission that in cooperation with the engineering and medical colleges at different university centres, the Provincial Governments and the Government of India would be in a position to facilitate the establishment of Public Health Engineering studies so as to attract a large number to these courses.

15. *Nursing.*—It is now well-known that in all fields of Public Health, Public Health Engineering and Nursing play a very important role. There have been in existence for a large number of years schools of Nursing which have been giving diplomas to those trained therein. The higher type of training as envisaged through the recently started degrees in Nursing is now available through the Universities of Madras and Delhi. The Commission is anxious that such degree courses should not be multiplied without a proper background of training and without proper personnel. In a professional study like Nursing, the academic aspect of the question should receive consideration, but it is more fundamental that the practical aspect should always be emphasised.

V.—Indigenous Systems of Medicine.

16. *Ayurvedic and Unani Medicine: Their Strength.*—These systems of healing have behind them many centuries of accumulated experience. As we have travelled over the country and have talked with many of the ranking physicians of India, we have found among able and widely experienced doctors of the scientific school very great divergence of opinion concerning the merits of the indigenous systems. These differences of opinion, it seems to us, depend largely on whether attention is directed to the desirable or to the undesirable elements of that practice. In favour of the indigenous systems it is said that the tradition of the native healer is to treat, not just

the specific disease, but the whole personality in its entire make-up and in its total environment. The modern medical specialist has tended to treat the particular ailment of the patient. He is too busy, and it has not been in his tradition, to become so well acquainted with the patients' total circumstances that he can have an opinion as to whether the ailment he treats is the chief difficulty or is only the point of weakness which appears as the obvious effect of a more deep-seated difficulty. The present great development of psychosomatic medicine in the West, these men say, is but a belated recognition of principles which the indigenous practitioner has been recognizing all along. Also, the indigenous practitioner works within the people's means. He uses remedies they can afford, whereas western remedies are, in fact, much beyond the reach of the masses. Lastly, in the course of time valuable remedies have been discovered which should not be lost to science. While ephedrin reached the western world from China, it was also known in India. The remedy isapghul, now adopted in the British pharmacopia as a purely mechanical laxative, is among the best remedies in its field. A number of able doctors of the western scientific school have given us illustrations, some of them under conditions which could be critically observed, of the effectiveness of some Indian remedies.

17. *Their Weakness.*—Those who depreciate indigenous medicine point to the fact that most native healers lack any concept of sanitation or of aseptic conditions. They have little or no scientific knowledge of anatomy or physiology. They are blindly traditional. Remedies continue to be used when their specific values, if any, have long since been forgotten. The true value of ephedrin had little or no relation to the use to which it was being put in China when it was discovered by western doctors. Much of the practice of native healers is little above magic or incantation.

18. *Interaction of the Indian and Western Systems.*—The Ayurvedic and Unani schools are adopting western methods in the study of anatomy, physiology, bacteriology etc. They are adopting western remedies and are incorporating western methods. On the other hand scientific medicine is adopting some of the indigenous remedies and methods.

It would seem to be desirable :

1. To provide for the continuance of indigenous schools, so that any contributions they may make to modern medicine may not be lost, and so that inexpensive medical care may not be taken away from the mass of the people when no other is available to them.

2. To develop one or more research centres for the study both of indigenous remedies and of indigenous methods. Among the thousands of native remedies now used it would be strange if there were not some of high value. The discovery of even a very few of the order of quinine, sconite, ephedrin, isaphgul or belladona would justify a large amount of research. It would be desirable in research on native drugs to develop modern large scale screening methods whereby preliminary tests could be made to economically determine possible values of large numbers of supposed remedies, with intensive study of those which disclose possibilities. Modern medicine developed in cool, humid regions where chemical properties of plants are usually dilute. Semi-tropical and semi-desert plants tend to have much more concentrated qualities. The probability of finding medicinal values, therefore, would seem to be good, and there is possibility of developing new industries from what is discovered.

19. *History of Medicine course*—Our modern medical schools would do well to incorporate a course on the history, methods, philosophy and content of indigenous medicine. This would help to preserve the values existing in these systems. Also, with such introduction, an occasional student would find continuing interest in pursuing the subject more intensively. Indian medicine should see itself as custodian and trustee of our inheritance from the many generations of our people who have given thought to the art of healing.

VI.—Recommendations.

20. We recommend—

(i) that the maximum number of admissions to a medical college be 100, provided the staff and equipment for that number are available ;

(ii) that all the departments of study which require hospital facilities be located in a single campus ;

(iii) that there be 10 beds per student admitted to a college ;

(iv) that training in a rural centre be required both in the under-graduate and graduate stages ;

(v) that post-graduate training be offered in certain colleges taking into account the personnel and the equipment essential for the purpose ;

(vi) that Public Health Engineering and Nursing be given greater importance ;

(vii) that facilities for research in indigenous systems be provided ; and

(viii) that History of Medicine with special reference to Indian systems be taught in the first degree course in Medicine.

G.—New Professions

1. *Increasing Demand for Professional Discipline*

In a buffalo cart the space between the hub and the axle may be as much as half an inch. In a good modern automobile there are bearings which must be accurate to within one-thousandth of an inch, and in parts of some airplane instruments the accuracy must be within one ten-thousandths of an inch. In a primitive community a bazaar keeper need only to know the habits and economic conditions of his neighbours. The modern industrialist must keep his finger on the pulse of national and international life. Such change of condition requires not only increase of skill but greatly increased variety in skills and abilities. The result is that as life becomes more complex new callings arise and old callings take on the range and precision and methods of professions.

In our modern age, unless such professions develop, and unless educational provision is made for them, two unfortunate results will follow that neglect. First, many social and industrial needs which require special skills will remain unfilled, and the nation will be seriously handicapped. Much of what people want must be imported, often at excessive cost. Second, young men and women, crowded

into a few old line professions, over-supply those particular needs, and experience frustration. Thus supply and demand fail to meet. It is important that new professions be recognized and prepared for. We shall describe a few as illustrations.

I.—Business Administration.

" *Operating and adapting the economy are never ending activities* ; *so is the education of youth for their activities. To educate men and women to direct, manage and conduct economic affairs through whatever sort of economic system exists for the purpose is an enduring necessity, as permanent as the complexity of economic society.*

Prior to World War I, business was generally looked upon as the acquisitive art of making and trading for private gain..........Now, three decades later, it is possible to see that business has changed, the whole economy has changed, and our attitudes have changed ......The administration of modern business is now concerned with the analysis of problems, the making of decisions, the formulation of policies, and the management of daily operation. It draws upon all departments of knowledge, sponsors research on a prodigious scale, and makes use of staff experts in a variety of fields, and is itself an intellectual activity that now calls for talents of the highest order. The administrator must lend his voice to questions of public interest and public policy, and at such times he is in need of broad comprehension and qualities of statesmanship........... Business education should be so organized as to prepare youth for the management of economic institutions whether those institutions be business firms, labour unions, government economic agencies or other types of operating organizations "[1].

2. *Competence is Wealth.*—A man-hour of work in an American industry produces twice as much as a man-hour of work in a British industry (a man-hour of work in American coal mining produces four times as much coal as in British coal mining). Yet British industry is efficient as compared with most of that in Europe.

It is such great economy in production which enables America to supply goods to a large part of Western Europe, as under the Marshall Plan, and yet in her own country to maintain the world's highest standard of living. One of the reasons for this high standard of American production is that in America business is coming to be seen as a profession which in its higher levels, requires first hand experience plus orderly, disciplined training at least equal to that in medicine or engineering.

[1] Robert D. Calkins, Dean, Columbia University School of Business.

3. *A rapidly growing Profession.*—The first American College of Business, The Wharton School of the University of Pennsylvania, was founded in 1881. Now, according to Mr. Leverett Lyon, Chief Executive of the Chicago Association of Commerce and Industry, there are several hundred business colleges of professional grade, with about 2,00,000 of students. In 1948 more than 35,000 received degrees in business, while more than 2,000 received master's degrees. Great as has been the progress in this field, it is only a beginning.

American business education is extremely critical of its own work and is striving earnestly to meet more nearly the needs of rapidly changing social and economic conditions.

If India is to become an effective industrial country, with high standards of living for the average worker, business must be looked at as a profession and prepared for as thoroughly as any other. The difference between a craft and a profession has been described as the difference between a job and a career. But the difference is greater than that. As in engineering the technician deals chiefly with empirical skills, while the professional works not only with skills but with natural laws, organized knowledge, and the application of general principles ; so in business there is a difference of kind between commerce courses and the profession of business. Following the tradition of the requirements of British administration, much of our courses in Commerce have been on the craftsman's level. Equipment for business education on a professional level will require careful preparation and substantial support. Such education should not be introduced in a partisan spirit, but should prepare for a high quality of business administration whether for public business, private industry, labour union management, or the management of the business affairs of educational institutions.

In some callings, such as medicine, it is commonly assumed that if a person has successfully completed a prescribed course of study he is competent to practise ; otherwise not. The calling of business cannot be so limited. Its operations range from extreme simplicity to those which demand preparation and competence of a high order.

4. *The content of Business Education.*—As to education that is truly professional, the following is fairly representative of opinion in the field of business administration.

Concerning education preparatory to professional business education, Dean H. P. Dutton of the School (College) of Business of North Western University writes :

" As preparatory to professional courses, the student should have had introductory courses in Chemistry and Physics, Biology,

including Physiology, and Geography. Economics should be paralleled by adequate teaching in community life—the dynamics and ethics of living together. Much economics teaching assumes the existences of social restraints and from there on ignores them and assumes that the individual will act (and by implication rightly) solely from selfish motives. The end of that philosophy is such a breakdown of the art of living together as we have already witnessed here and there.

There should also be included a study of literature and the arts to acquaint the student with as much as practicable of the world's heritage and to cause him to understand the artistic as well as the economic drive. The student should have, in addition, a working knowledge of a second language, a thorough course in accounting, and a course in psychology ".

For a business man, as for an engineer, the first requirement is that he shall be an educated man and citizen, so that in his business he can act with informed, social minded statesmanship, and not simply as a business technician.

Professional business education should include mathematics ; statistics ; theory of organization ; business structure ; finance , including management and budgeting of assets and of expenses ; philosophy, history and theory of law ; and organization of work, including motion economy, process analysis and procedures, standardization of skills, cost analysis, and the like. The structure of distribution should also be studied. In industrial cases this training can be slanted towards factory practice, office management, institutional management, agriculture, or marketing, according to the student's chief interest. While industrial relations should be included in every business course it is so important as to constitute a profession of itself, and is discussed as such.

Professional business education is treated both as an undergraduate and as a postgraduate field of study. In few fields is there such variety in the preparation required or such variety in the courses offered. There is a tendency in the work for the master's degree to deal with broad, fundamental principles, though work for the Ph. D. degree commonly deals with highly specialized subjects. However, there are many exceptions to such statements. Since business education is one of the later fields to be treated in a professional manner, it is relatively free from the rigid treatment which has characterized some of the older professions. There is effort to make the teaching reflect the real need.

Since professional business education has not fully emerged in India, the best suggestion which we can make is that those planning such education inform themselves as to the best practice in other countries, and from Indian students who have had representative training in institutions offering some of the best courses in those countries, assemble staffs in Business Administration on a professional level.

The "know-how" of professional business practice must also be acquired. Through an alternating work and study programme, or through working in vacations, students may get that first hand experience which is essential[1].

II.—*Public Administration.*

5. *The need for professional competence in Public Administration.*—Where central, provincial or local governments are spending a total of hundreds of crores of rupees a year, the efficient use of such vast sums becomes a matter of great public moment.

India inherited a public administration process made up of a vast accumulation of obsolete bureaucratic routine, one of the chief principles of which seemed to be that responsible discretion should not be delegated, but should be tightly held at the top. The admirably high quality of public administration in England was scarcely transmitted to Indian administration. Comparing the operation of this cumbersome, wasteful system with modern, efficient administration , it seems possible that with radical improvement of administration the entire public work of India might be accomplished with less than half its present expenditure. What such a change would mean in relief from financial pressure and in extension of such vital services as education, power development, the extension of irrigation, agricultural production, and in other ways, can scarcely be imagined. Many factors must enter into such a change, but they are interrelated, and an improvement in one factor tends to the improvement of others. For instance, cumbersome, involved, wasteful procedures lead to a sense of irresponsibility and to a lowered ethical tone. On the other hand, clean cut, intelligible and effective procedures, with clear and reasonable focussing of responsibility, sharpens the sense of personal responsibility, and gives support to ethical standards.

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[1] Appendix I is a discussion of working opportunities in America under Engineering Education and indicates how working opportunities may be secured in American firms. It would be far better if such experience could be gained in small excellently managed firms as then a student could more nearly see the whole process of business management and not be lost in vast specialisation as might be the case in the office of a great corporation.

In the higher levels of government there is need for clear comprehension of broad principles of government and of administration. Those who formulate or give effect to important policies should know what is involved in their action. They should know how similar issues have been met in the past, and with what success. They should understand how the policies they are dealing with will affect other policies and issues.

6. *Public Administration Education Abroad.*—Public Administration covers a wide range of activities. Some of these deal with specific detailed administration and require specific skills. Others concern broad policies and programmes, and require the qualities of overall statesmanship. A wide range and variety of preparation is necessary for a wide range of activities.[1] In the course of time there should be educational preparation for many kinds of public service.

Since professional training for public service has not yet been developed to any considerable extent in our country, it is helpful to look to other countries to see what is being undertaken.

In America, which lacked England's long tradition of orderly government, democratic government grew so rapidly that it far outran the ability of public officials to deal with it. Confusion and waste were the natural result. In an effort to increase understanding of government and of public administration, more than thirty American universities and a number of research institutions have established schools or departments of government and public administration to deal with problems of government and public administration to the post-graduate level.[2] Some of these have been in operation for a quarter of a century or more. Their graduates hold important positions at policy making levels in the public service, and the institutions themselves are called upon by the national state and local governments for research and studies of the highest importance. In fact, the formulation of complex public policy in America today would be almost impossible without the direct help of these institutions and of the men they have trained. In contrast to England, where a long tradition of public service exists, America is undertaking to train the first generation of competent public servants. In that its situation is similar to that of India.

7. *Public Administration Education at Home.*—Free India, to make up for lost time, must deal with an unusual number of public issues of vast significance, while at the same time try to modernize an inadequate administrative aggregation. For those purposes we

[1] The Public Administration Clearing House, 1313, E. 60th Street, Chicago, publishes a list of 117 colleges and universities giving courses in Public Administration.

[2] See Appendix J, for discussions of Public Administration Education.

need many public servants with the highest quality of thorough going professional training. The institutions to provide such training do not yet exist. We give in Appendix J brief statements of the philosophy and methods of a few American institutions which work in the fields of government and administration which have been communicated to us.

In working out a total budget of educational and research expenditures the central government might well consider an institute for research in public administration and government, and might also look with favour on the establishment of courses or departments of public administration in a number of universities. Some of these might specialize in local and provincial government, some in national or international government, while some might cover more than one such field.

III.—Industrial Relations.

8. *Industrial Relations in a Democracy.*—A democracy cannot live by compulsion or violence. Unless there is general mutual confidence, respect and regard among the members, stress and trife will become dominant, and out of that will come chaos or some form of dictatorship. In a feudal or semi-feudal society a small element of that society gives direction to the whole, and often a relationship of master and servant is accepted as a matter of course. With the adoption of the democratic forms of government, and especially with universal adult suffrage such relationship cannot be long maintained.

For a short time in a new democracy the old habits of acquiescence in authority may continue by the momentum of habit, but not for long. That period of acquiescence in the old relationships is a day of grace which may be used for a readjustment of relationships so that they come to rest on mutual goodwill and mutual confidence. If such a transition is successfully made, the evolution of society can be orderly and within the law, without violence to any element of society. If that adjustment is not made, there will develop a conflict, with financial power and business experience on one side, and large numbers on the other. When the spell of authority is broken the power of numbers becomes very great.

In some progressive countries both capital and labour are beginning to set aside strong emotional bias and to look at the cold realities and the possibilities. In many industries in such countries there is a determination to overcome strong feeling and to explore actually for the possibility of open dealing, mutual respect, and relations of equality. It is interesting and hopeful that in those

countries where this attitude is furthest advanced the governments have greatest stability, industrial production is on the highest level, life is most secure, and the standard of living is highest.

9. *Good Intentions not Enough.*—Where there is such honest effort to find common ground for mutual respect and goodwill, it is found that more than good intentions are necessary. Thorough-going understanding of facts and conditions is no less important. Repeatedly employers with good intent, in acting without an understanding of the field, have met what seems to them gross ingratitude.

In the effort to work out conditions under which mutual confidence and good will can control relationships, there is growing up a new profession which is of very great importance—that of the specialist in industrial relations. The continuance of orderly government and of a stable society rests on this issue of whether labour on the one hand, and management and capital on the other, can succeed in working out their problems in a spirit of equality and of mutual trust and goodwill, or whether the issues must be fought out by bitter enemies. Here the new profession of industrial relations administrator can be of the greatest help.

As with any profession, no one person can become competent solely by his own thought and effort. The very essence of a profession is that it undertakes to organize, to advance and to transmit the whole body of accumulated wisdom, knowledge, standards and skills in its field. Such preparation, with few if any exceptions, calls for organized professional education. This is proving to be true in the field of industrial relations.

10. *A Successful Example.*—A successful course in Human Relations in Industry has been in operation for about twelve years at the Massachusetts Institute of Technology.

In addition to the courses offered, the programme includes post-graduate research in labour relations problems, and members of the staff have participated widely and continuously in labour conciliation and arbitration, and counsel for both labour and management.

The following is suggested for a course in Education for human relations in industry.

11. *Under-graduate Programme*: *Objectives.*—More effective training of people who will go into business and industry and government as *line* managers (supervisors, foremen and up the

line). Management's task—even the most technical aspects of it—is accomplished entirely through people. Consequently, understanding of human behaviour in organizations, and skill in dealing with people at all levels of the organizations are primary requirements for effective management. It may be mentioned that these same requirements are equally necessary in all organizational relations including the international. The focus here is on industry because : (1) the units are in general more manageable, and (2) our knowledge is greatest today in this field.

It is not the objective of this under-graduate programme to train professional staff personnel administrators although such a programme could provide an excellent base for specialized graduate training.

It is likewise not the objective of such a programme to train personnel technicians, although such training might be accomplished with some modification of this programme.

This programme is planned in general for *line rather than staff* people. (Line people are those directly engaged in carrying on the business, industry or other activity. Staff people are counsellors and advisers.)

12. *Under-graduate Programme* ; *General Description.*—(*a*) Basic engineering training, including mathematics, physical science, engineering fundamentals.

This part of the programme should occupy about two years. No specialization in a particular field would be acquired or needed. The general level of competence achieved should perhaps be about that required to pass New York State Engineering Board exams. The purpose is to acquaint the student with scientific method and with engineering practice generally, to make him at home in the shop, and to give him certain " tools " he may need later.

(*b*) Basic training in business management, including elementary economics, accounting, production methods, business organization.

The emphasis here should be on an understanding of the nature of important problems and not a detailed memorizing of formulas or techniques.

(*c*) Human Relations, including the following :

(1) A basic social science course, chiefly to orient the student to these disciplines, and to break down his tendency to regard his culture as the centre of things. Here the importance of values would begin to be emphasized, although it would be ideal if values could be directly

stressed in the engineering part of the programme also. (The problem is that of teachers who will do it effectively).

(2) A year's course on the nature and theory of organized human effort, stressing all kinds of relationships among people (marriage, family, friendship, social groups, community, industry, nation). Problems of organizational structure and function, of size, of planning would enter in, but the chief requirement is an integrated theory of why people are found in organizations (or relationships), and of the conditions under which such organized behaviour is effective.

The Tavistock Institute of Human Relations in London is doing a great deal along these lines. Wight Bakke of the Labour-Management Centre at Yale is doing something well in this line.

(3) A course in labour relations utilizing the approach developed in (2) above, and stressing the possibilities of union-management co-operation. This course could make extensive use of " role playing " as a method for studying contract negotiation, grievance handling, arbitration, co-operative efforts, etc.

(4) A course aimed at the development of skills in dealing with people. This course would use role-playing and real-life projects exclusively. In it, the attempt would be to permit the student to learn, *by doing*, the skills of interviewing, running meetings, handling disciplinary problems. There is a tendency to shy away from this sort of thing because it is regarded as too narrowly " vocational. " However, these skills are *vital* for anyone but a hermit. So far we have merely assumed that they are inherent in human beings ! The truth is quite to the contrary.

(5) A brief course in personnel administration stressing the relation of staff experts to line managers, their proper use, and the kinds of help they can give. While detailed case materials are effective in teaching such a course, the emphasis should be on the philosophy of personnel administration and not on the acquisition of detailed knowledge of techniques.

(*d*) General studies in the humanities and the life sciences.

The aim of the course in psychology would be to aid the student to acquire insight into himself, and tolerant understanding of the behaviour of others. It should be " dynamic " psychology, stripped

of the usual irrelevant material on physiology, sensation, rote memory, etc. It should stress motivation and personality development rather than an artificial analysis of static traits or experimentally isolatable " functions. " The teacher should be a clinician and not a " brass instrument psychologist. "

(e) Tool courses as needed.

Examples.—Effective report writing, public speaking, how to study, improvement of reading habits, etc.

13. *Post-graduate Training for Professional Personnel Administrators* : (a) *Pre-requisites.*—A programme such as that outlined above would be excellent. However, an undergraduate who has specialised in any of the social sciences would be adequately equipped *if the student* is competent and well adjusted personally and socially, provided his values are " good " ones. He should not have too much craving for power, which is often well-disguised, and there is no use for the sentimental " do-gooder " in this field. They both work infinite harm.

If the " human relations " and the " dynamic psychology " aspects of the undergraduate preparation are weak (and they usually are !) provision should be made to include these as first year graduate subjects.

(b) *The programme*—(1) Production management :

The staff man *must* understand what line management's task is, and what the line manager's problems are, or he cannot fill his staff role without making trouble for everyone ! We would like to see all staff experts have a year or two of experience as line foremen in some factory.

(2) Personnel Administration.

Thorough knowledge of the major methods, their purposes, their problems, but *not* detailed drill in their mechanics [because (a) the mechanics must be developed to fit each situation, and (b) the mechanics are changing with great rapidity all the time. The student should not be made into a file cabinet of minutiae of technique.]

(3) Research Methodology in the Social Sciences.

It would be best if this is taught from a base of the philosophy of science generally.

(4) Training Methodology.

The staff expert is above all an educator. He should know how !

(5) Internship.

At least two summers, preferably more, in industry, labour unions, governmental bureaus, etc.

(6) Thesis.

A practical project carried out in the field, but having theoretical or methodological implications of some importance.

In evaluating such a student for his Ph.D. great stress should be put, not on his verbal knowledge, but on his skill in action situations. It is what he is able to do, not what he "knows" intellectually, which is important. If he has acquired skill in operating in any social situation, if he has demonstrated that he can learn from his mistakes, and if he has high ethical values regarding his profession we should be entirely satisfied (considering how little we know in this field today).

14. *Training the Personnel Technician.*—For the psychological tester, the job evaluation technician, the trainer, the time and motion study technician, etc. a programme similar to that outlined in I, above, would be adequate if there were a little more specialization. The engineering base would be desirable, but a special study of social science (with mathematics and statistics) could get along. Reducing the engineering requirements would leave room for more specialization in industrial psychology or personnel administration, or industrial engineering.

15. *An Emerging Profession.*—It cannot be said that industrial relations administration has fully arrived at the status of a profession in the public mind, but it is steadily rising in recognition. To a limited but growing extent the field of industrial relations is ceasing to be solely a conflict for power between antagonists, and is becoming an effort to find common grounds for real agreement, and consequent cooperation for economical production under desirable working conditions.

16. *Graduate Training.*—Graduate courses for the graduate degrees of M.Sc. in Labour Relations and for the Ph.D. degree would be desirable if ably conducted. The fields covered by these graduate courses might well include :—

Collective Bargaining, Mediation and Arbitration.
Human Relations in Industry.
Industrial Education.
Industrial and Labour Legislation and Social Security.
Labour Market Economics and Analysis.
Labour Union History, Organization and Operation.
Personnel Management.
Economic and Social Statistics (available as a minor).
Industrial and Labour Problems (available as a minor for candidates majoring in fields outside Industrial and Labour Relations).[1]

[1] In Appendix K a bibliography of important books in the field of Human Relations in Industry is given.

CHAPTER VIII

Religious Education

I.—History of the Problem.

1. Pre-British Period. 2. The British Policy of Religious Neutrality. 3. The Education Commission of 1882. 4. Its Recommendations. 5. Mr. K. T. Telang's Views. 6. Government's Decision 7. The Indian Universities Commission of 1902. 8. The Calcutta University Commission 1917-1919. 9. The Central Advisory Board 1944-1946.

II.—The Present Position.

10. The relevant Articles of the Constitution. 11. Conscience Clause. 12. American Example. 13 Australian Constitution.

III.—The Secular State.

14. The Abuse of Religion. 15. The Secular State. 16. Democracy and Religion. 17. The Indian View of Religion. 18. Religion as Realisation. 19. Spiritual Training. 20. Self-Effort. 21. Freedom of Inquiry. 22. Freedom in Social Practices. 23. Respect for Other Religions. 24. Universal Religion. 25. India's Role.

IV.—Religious Education : Practical Measures.

26. The Need for Religious Instruction. 27. The Values of Religion. 28. Gandhiji's Views. 29. The Need for Religion in a Secular State. 30. Practical Measures. 31. Silent Meditation. 32. Study of Great Books. 33. Study of Religious Scriptures. 34. Philosophy of Religion. 35. Christian Missions. 36. Recommendations.

I.—History of the Problem.

1. *Pre-British Period.*—In the Hindu and the Muslim Periods the teaching of religion was an essential part of education. It was assumed that education should not stop with the development of intellectual powers but must provide the student, for the regulation of his personal and social life, a code of behaviour based on fundamental principles of ethics and religion. Where conscious purpose is lacking, personal integrity and consistent behaviour are not possible. For a satisfactory and successful life, a person must not only be intellectually alert but must be emotionally stable, able to endure the conflicts and tensions that life is almost certain to bring. We cannot leave to chance the emotional and ethical development of the young people. One of the major aims of education should be the development of the whole man.

2. *The British Policy of Religious Neutrality.*—As foreign rulers of the country, the British adopted a policy of religious neutrality.

Christian Missions to whom India is greatly indebted for their educational and medical work, were not happy in regard to this principle of religious neutrality as they were keenly interested in the propagation of the Christian Faith. Dr. Alexander Duff giving evidence before a Select Committee of the House of Lords on the 3rd of June 1853 said : " While we rejoice that true literature and science are to be substituted in place of what is demonstrably false, we cannot but lament that no provision whatever has been made for substituting the only true religion—Christianity—in place of the false religion which our literature and science will inevitably demolish." The Despatch of 1854 expresses the hope that " institutions conducted by all denominations of Christianity, Hindus, Muhammadans, Parsis, Sikhs, Buddhists, Jains or any other religious persuasions may be affiliated to the universities, if they are found to afford the requisite course of study, and can be depended upon for the certificates of conduct which will be required."

In reply to an address by the Christian Missionaries, Lord William Bentinck, the Governor-General, said : " The fundamental principle of British rule, the compact to which the Government stands solemnly pledged, is strict neutrality. To this important maxim policy as well as good faith have enjoined upon me the most scrupulous observance. The same maxim is peculiarly applicable to general education. In all schools and colleges supported by Government, this principle cannot be too strongly enforced, all interference and injudicious tampering with the religious beliefs of the students, all mingling, direct or indirect teaching of Christianity with the system of instruction ought to be positively forbidden." These views were affirmed in a Despatch of the Court of Directors, dated 13th April 1858.

3. *The Education Commission of 1882.*—The report of the Education Commission of 1882 observes :—" The declared neutrality of the State forbids its connecting the institutions directly maintained by it with any one form of faith ; and the other alternative of giving equal facilities in such institutions for the inculcation of all forms of faith involves practical difficulties which we believe to be insuperable. " Again, " It is true that a Government or other secular institution meets, however incompletely, the educational wants of all religious sects in any locality, and thus renders it easier for them to combine for educational purposes ; while a denominational college runs some risk of confining its benefits to a particular section of the community and thus of deepening the lines of difference already exitisng."

4. *Its Recommendations.*—The Commission recommended in paragraph 338 :

"(8) That an attempt be made to prepare a moral text book, based upon the fundamental principles of natural religion, such as may be taught in all Government and non-Government Colleges ;

"(9) That the Principal or one of the Professors, in each Government and Aided Colleges, deliver to each of the College classes, in every Session, a series of lectures on the duties of a man and a citizen."

5. *Mr. K. T. Telang's Views.*—In regard to these recommendations, Mr. K. T. Telang who was a member of the Commission, wrote : " There are only two possible modes, which can be adopted in justice and fairness, of practically imparting religious instruction. Either you must teach the principles common to all religions under the name of Natural Religion, or you must teach the principles of each religious creed to the student whose parents adopt that creed." Again, " At all events on this I am quite clear, that our institutions for secular instruction should not be embarrassed by any meddling with religious instruction ; for such meddling, among other mischiefs, will yield results which on the religious side will satisfy nobody and on the secular side will be distinctly retrograde. "

6. *Government's Decision.*—The Government of India in its Resolution No. 10/309, dated the 2nd October 1884, reviewing the Report of the Commission, said on this point.—" It is doubtful whether such a moral text book as is proposed could be introduced without raising a variety of burning questions ; and strongly as it may be urged that a purely secular education is imperfect, it does not appear probable that a text book of morality, sufficiently vague and colourless, to be accepted by Christians, Muhammadans and Hindus would do much, especially in the stage of Collegiate education, to remedy the defects or supply the short-comings of such an education. "

7. *The Indian Universities Commission of 1902.*—The Indian Universities Commission of 1902 considered the question of the inadequacy of a purely secular education but was unable to suggest any definite measures for improvement. It turned down the suggestion to have a course in Theology in view of the opposition " not to the recognition of Natural Theology as a subject of University study, but to the introduction of the Theology of any one religion into the curriculum of the University. " It decided " that it is neither practicable nor expedient to make provision for a Faculty of Theology. "[1]

8. *The Calcutta University Commission, 1917-1919.*—The question of religious education was not considered by the Calcutta

[1] Paragraph 47 and Recommendation 4 under *Faculties.*

University Commission in view, apparently, of the difficulties of the problem in a country where religions seemed to be a source of strife and disunion.

9. *The Central Advisory Board, 1944-1946.*—The memorandum on the Post-war Educational Development in India (1943) agreed that " religion in the widest sense should inspire all education and that a curriculum devoid of all ethical basis will prove barren in the end. "[1] The Central Advisory Board at its meeting held in January, 1944, recognised the importance of ethical and religious instruction and appointed a special committee under the Chairmanship of Rt. Rev. G. D. Barne, the Bishop of Lahore, to examine the desirability and practicability of providing religious instruction in educational institutions.

The Committee presented an interim report in 1945 and a further report in 1946 at the twelfth meeting of the Board held at Mysore. " After fully considering all aspects of the question the Board resolved that while they recognise the fundamental importance of spiritual and moral instruction in the building of character, the provision for such teaching, except in so far as it can be provided in the normal course of secular instruction, should be the responsibility of the home and the community to which the pupil belongs. " If we are not prepared to leave the scientific and the literary training of pupils to the home and the community, we cannot leave religious training to these. The child is robbed of its full development if it receives no guidance in early years towards a recognition of the religious aspects of life. If this guidance is left to homes and communities, the chances are that communal bigotry, intolerance and selfishness may increase.

II.—The Present Position.

10. *The Relevant Articles of the Constitution.*—The Constituent Assembly of India adopted certain principles in regard to religious instruction in educational institutions. The relevant articles are 19, 21, 22 (1), and (2).

Article 19 affirms freedom of conscience and free profession, practice and propagation of religions. 19 (1)—" *subject to public order, morality and health and to the other provisions of this part, all persons are equally entitled to freedom of conscience and the right freely to profess, practise and propagate religion.* " This is a principle of true religion that every one should have the right to believe and teach according to the dictates of his own conscience.

[1] Introduction, 7.

Payment of Taxes for the Promotion of any Particular Religion.—Article 21 reads : " *No person may be compelled to pay any taxes, the proceeds of which are specifically appropriated in payment of expenses for the promotion or maintenance of any particular religion or religious denomination.*" This means that public funds raised by taxes shall not be utilised for the benefit of any particular religion.

The Honourable Dr. B. R. Ambedkar explained in the Constituent Assembly the significance of this section. He said: "For instance, if we permitted any particular religious instruction, say, if a school established by a District or Local Board gives, religious instruction, on the ground that the majority of the students studying in that school are Hindus, the effect would be that such action would militate against the provisions contained in Article 21. The District Board would be making a levy on every person residing within the area of that District Board. It would have a general tax and if religious instruction given in the District or Local Board was confined to the children of the majority community, it would be an abuse of article 21, because the Muslim community children or the children of any other community, who do not care to attend these religious instructions given in the schools would be none the less compelled by the action of the District Local Board to contribute to the District Local Board Funds. "[1]

" 22 (1) : *No religious instruction shall be provided in any educational institution wholly maintained out of State funds.*—

Provided that nothing in this clause shall apply to an educational institution which is administered but has been established under an endowment or trust which requires that religious instruction shall be imparted in such institution.

(2) *No person attending any educational institution recognised by the State or receiving aid out of State funds shall be required to take part in any religious institution or to attend any religious worship that may be conducted in such institution or in any premises attached thereto unless such person, or if such person is a minor his guardian, has given his consent thereto.* "

No religious instruction shall be provided in any educational institution maintained wholly out of State funds. The reasons which impelled this resolution are obvious. We have in our country followers of the Hindu, Muslim, Christian, Sikh, Buddhist, Jain, Zoroastrian and Jewish faiths. State educational institutions cannot hope to provide religious instruction in all these faiths. In

[1] *Constituent Assembly Debates*, Vol. VII, No. 21, p. 883.

the words of Dr. Ambedkar " to assign such a task to the State would be to ask it to do the impossible." Besides, these religions claim exclusive possession of truth. " We should be considerably disturbing the peaceful atmosphere of an institution if these controversies with regard to the truthful character of any particular religion and the erroneous character of the other were brought into juxtaposition in the school itself."[1]

There are however certain institutions maintained out of funds provided by private donors or ancient rulers which are now being administered by the State. The instrument of foundation of these endowments might have in terms provided for religious instruction being given. This class of cases is saved by the proviso to article 22.

In aided institutions as distinct from institutions wholly maintained by the State such as Hindu, Muslim or Christian missionary institutions, religious instruction is not prohibited but no person shall be required to take part in religious instruction. Any provision in a Statute or municipal law under which students are required to attend such religious instruction will be void and of no effect.

11. *Conscience Clause.*—While the State is precluded from giving religious instruction itself, it is not precluded from recognising and giving aid to institutions which can provide this type of education so long as the religious freedom of parents and of students when of age is protected by a conscience clause. The Constitution requires that religious instruction may be imparted to all those who desire to take part in it. It does not put it negatively that religious instruction may be imparted to all as a rule except to those who object. It says that religious instruction shall not be imparted except to those who expressly desire to have it. Actually for the words : " unless such person or if such person is a minor, his guardian, has given consent thereto," an alternative was suggested, " unless such person or if such person was a minor, his guardian has given written notice of his objection thereto." This suggested amendment was not accepted.

In the course of the discussion of Article 22 in the Constituent Assembly, the question was raised whether in institutions wholly maintained out of State funds like the Government Sanskrit College in Calcutta, where the Upanisads and the Gita are studied, their study would be permitted and Dr. Ambedkar replied : " My own view is this, that religious instruction is to be distinguished from

[1] *Ibid. p. 54.*

research or study. These are quite different things. Religious instruction means this. For instance, so far as the Islamic religion is concerned, it means that you believe in one God, that you believe that Pagambar the Prophet is the last prophet and so on, in other words, what we call dogma. A dogma is quite different from study. "[1] In other words, even in institutions maintained by Government, religion can be studied critically, as part of a course in general culture. There is a difference between the preaching of dogma and a philosophical study of religion. While the former is precluded, the latter is permitted. There shall be no sectarian indoctrination in State institutions. But history of religion and of religious institutions, comparative religion, philosophy of religion can all be studied even in institutions maintained wholly out of State funds.

The Constitution makes out that the State should not get mixed up with the encouragement of any particular form of religion. It provides equal opportunities for all religions. There are no special privileges or special disabilities for any religion. This principle is in accord with the spirit of democracy.

12. *American Example.*—The American Republic has created a secular state, neither religious nor irreligious for the precise purpose of preserving respect for individual conscience. The first amendment to the American Constitution neither approves nor rejects the religious sanctions of morality. It states: " Congress shall make no law respecting an establishment of religion or prohibiting the free exercise thereof." It guarantees that all Americans may worship God in accordance with their own conscience without any interference from the State. If the State is given power to direct religious matters then freedom of religion would cease. On this point the late Lord Bryce observed in *The American Commonwealth.* " Half the wars of Europe, half the internal troubles that have vexed European states, from the Monophysite controversies in the Roman Empire of the fifth century down to the *Kulturkampf* in the German Empire of the nineteenth, have arisen from theological differences or from the rival claims of church and state. This whole vast chapter of debate and strife has remained virtually unopened in the United States. There is no established church. All religious bodies are absolutely equal before the law, and unrecognised by the law, except as voluntary associations of private citizens."

13. *Australian Constitution.*—The Australian Constitution has the following clause : " The Commonwealth shall not make any law for establishing any religion, for imposing any religious observance,

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[1] *Ibid p. 885.*

or for prohibiting the free exercise of any religion, and no religious test shall be required as a qualification for any office or public trust under the Commonwealth." It conserves the right of each and every citizen to follow his own religious convictions. It recognises the right of every man and woman to worship or not to worship God according to the dictates of his or her own conscience.

III.—The Secular State.

14. *The Abuse of Religion.*—The difficulties through which India passed in recent years led to the formulation of these principles. The intention is not to ban all religious education but to ban dogmatic or sectarian religious instruction in State schools. If we teach sectarian creeds to our children in public schools, instead of developing in them the spirit of peace and brotherly love we encourage the spirit of strife, as the children become conscious of their divisive creeds and group loyalties.

There was a time when it was almost an article of faith that one cannot be a true believer in one's own religion unless one also believed that all other religions were false. Other religions may teach the same doctrines, even use the same words, but still we were taught that the one Voice came from Heaven and the other from the opposite region.

Many atrocities were perpetrated and many corrupt practices hallowed in the name of religion that we are tempted to look upon religion as a reactionary, obscurantist influence and a cause of disunion. Those who suffered wrong in the past or witnessed its infliction on others, in a mood of natural resentment, wish to ban religion altogether from the country.

We must not be carried away by sentiment. What is responsible for the communal excesses is not religion as such but the ignorance, bigotry and selfishness with which religion gets mixed up. Selfish people, in an attitude of cynical opportunism, use religion for their own sinister ends. In his thirty-second year Napoleon professed himself ready to adopt any religion which might serve his purpose : " I finished the war in the Vendée by calling myself a Catholic. I was a Mohammadan to establish myself in Egypt, and it was as an ultramontane that I gained support in Italy. If I governed a people of Jews I should rebuild the temple of Solomon."

15. *The Secular State.*—The abuse of religion has led to the secular conception of the State. It does not mean that nothing is sacred or worthy of reverence. It does not say that all our activities are profane and devoted to the sordid ideals of selfish advancement. We do not accept a purely scientific materialism as the philo-

sophy of the State. That would be to violate our nature, our *svabhāva*, our characteristic genius, our *svadharma*. Though we have no State religion, we cannot forget that a deeply religious strain has run throughout our history like a golden thread.

16. *Democracy and Religion.*—Besides, in the preamble to our Constitution, we have the makings of a national faith, a national way of life which is essentially democratic and religious. Whenever a human being strives upward toward enlightenment, goodness and concern for others, the spirit of religion is active. If we bear in mind that the whole future of our democracy depends on freedom of conscience, freedom of inquiry, moral solidarity, our secularism is an act of supreme courage and sublime loyalty to our national faith.

17. *The Indian View of Religion.*—The adoption of the Indian outlook on religion is not inconsistent with the principles of our Constitution. We may briefly refer to the central features of the Indian view of religion.

18. *Religion as Realisation.*—Religion is not to be identified with a creed to be believed, or an emotion to be felt or a ceremony to be performed. It is a changed life. We do not judge a man's religion by his intellectual beliefs but by his character and disposition. By their *fruits* and not by their beliefs do we know them.

19. *Spiritual Training.*—If religion is a matter of realisation it cannot be reached through a mere knowledge of the dogmas. It is attained through discipline, training, *sādhana*. What we need is not formal religious education but spiritual training.

20. *Self-Effort.*—It is a law of nature that every one should digest his own food. So also every one must see with his own eyes. By the exercise of one's own will and reason one has to attain spiritual enlightenment.

21. *Freedom of Inquiry.*—While dogmatic religion has always discouraged freedom of thought and prevented free inquiry whenever and wherever it had the power to do so, India has insisted that we cannot grow in spirit by following any person or institution blindly. As long as men are willing to follow blindly, there will be men ready to take advantage of the opportunity and lead them blindly. But we have always insisted on logical reflection (*manana*), questioning (*pariprasna*), inquiry (*jijnāsa*). Liberty is the first condition for the quest of truth. When we see the universe and all that is in it, souls and bodies, events and experiences in irreversible movement through time-space, we wish to gain some gleam of insight into the meaning of this mysterious process, this *samsara*. The universe becomes intelligible to the extent of our ability to apprehend it as a whole. We are

actors in a drama of which we do not know the eventual ending. Even as momentary actors in the crowded and agitated stage of life we must have some sense of the whole. Religion should come as a sense of fulfilment of this primary need of man.

We teach religious dogmas not to provoke doubts of questions but to give comfort to the human spirit. To introduce these studies in a university is to make a sharp break with the critical methods of inquiry followed in other disciplines of the curriculum. To prescribe dogmatic religions in a community of many different faiths is to revive the religious controversies of the past. To turn the students over to theologians of different denominations for instruction in the conflicting systems of salvation is to undermine that fellowship of learning which defines a college or a university.

Horace Mann put it with great force. " One Sect may have the ascendancy to-day ; another to-morrow. This year, there will be three persons in the Godhead ; next year, but one ; and the third year, the Trinity will be restored, to hold its precarious sovereignty, until it shall be again dethroned by the worms of the dust it has made. This year, the everlasting fires of hell will burn to terrify the impenitent ; next year, and without any repentance, its eternal flames will be extinguished to be rekindled for ever, to be quenched for ever, as it may be decided at annual town meetings. This year the ordinance of baptism is inefficacious without immersion ; next year one drop of water will be as good as forty fathoms. "[1]

The philosophical attitude which Indian religion emphasises lifts us above the wrangling of dogmatists. To-day dialectical materialism sets itself up as a system of dogma to combat another orthodox dogma. If a reconciliation is to be effected, it is only by the renunciation of the dogmatic approach.

One of the major causes of misunderstanding and conflict among individuals and groups is the habit of the uncritical acceptance of beliefs and doctrines and transmissions of them to our children through the methods of teaching, conditioning and indoctrination. As a result of the adoption of these methods we grow to accept these beliefs as self-evident or revealed truths which we should preserve and protect at any cost. Doubt becomes difficult and the obligation is felt to be sacred, that we should spread the faith and compel others to come in. This type of competitive indoctrination has been in practice for centuries in the sphere of religion and is now adopted by political faiths or " ideologies " as they are called. A healthy scepticism is the only remedy for these disturbing phenomena. In universities

[1] R.B. Culver: *Horace Mann and Religion in the Massachusetts Public Schools* (1929) p. 22.

and colleges we must develop the habit of free critical inquiry and apply the method of objective criticism not only to the beliefs and attitudes of people who differ from us but also to our own beliefs and attitudes.

22. *Freedom in Social Practices.*—Many of the religious institutions instead of being organs for personal and social growth have become rigid shells of customs and habits, made mighty by the accretions of time. They confront and awe the lonely individual. We must be free to criticise these forms and scrap them where necessary. In a world that is rapidly changing, we cannot live by outworn forms. We must realise that false religions have brutalised men by their bloody rites and the shrivelling terrors of superstition.

The truly religious man is the enemy of the established order, not its spokesman. He is the man of alien vision. He throws existing things into confusion. He is a revolutionary who is opposed to every kind of stagnation and hardening. He is the advocate of the voice which society seeks to stifle, of the ideal to which the world is deaf. We must cast off whatever hampers our sense of justice even though it may be venerable with the history of ages or consecrated by familiarity.

In a sense religion is the most secular of all pursuits. It starts where man is, with the facts and problems of his concrete life and goes with him wherever he is and whatever he does. No real religion will submit to separation from life. All life must be infused with the life of spirit.

23. *Respect for Other Religions.*—Respect for other religions is a sign of true humility of spirit. God alone knows the true picture. Our individual human apercus are shots in the dark. The *Rig Veda* says : " The Real is one ; sages call it by various names. " This is the teaching of Islam when taken in its profoundest sense. There are many doors to the temple and which one we enter is not so important so long as it is a temple and not a lumber room.

There is no justification for the fear that the recognition by members of one religion of the possibility of the possession of divine truth by any other might undermine the appeal of that religion to its supporters. Diversity of opinion stimulates thought, inquiry and investigation. It becomes evil only when intolerance steps in, when we try to impose our ideals on others. Concord is not possible so long as competing religions put forth exclusive claims to be the sole possessors of eternal truth.

What religious form we adopt is mainly determined by our nationality, by our social milieu. We are to a large extent determined by historical relativity. When we step above the creeds and enter

into the truth we will find that there is a common universe of discourse transcending the differences of tongues.

24. *Universal Religion.*--Through all the vicissitudes of India's history she tried to give expression to a sense of universality in religious as well as racial matters. Her outlook was oecumenical rather than parochial. She provided a home for each and every mode of universal tradition and did not exclude even those who had not faith in any religion. If religion concerns itself with peculiar historical events, there is not much meeting ground among followers of different religions who adopt different historical events as their religious bases. If we look upon the growth of different religions in different parts of the world as analogous to the growth of different languages, each expressive of the same mind, as the religions express the hunger of the human heart for the Infinite, groping and feeling out towards knowledge of the mysteries of things, then we may realise that the more completely a worshipper penetrates to the truth of his own religion, the readier will he be to appreciate and assimilate and be sustained by the truth of the other religions and the nearer will all be to a universal fellowship in the truth. The great religions give us the different dialects in which man has tried to speak of the Unseen. In spite of the bypaths, devious lanes and dead-end alleys of the history of religions, the roads for all their winding had but a single direction. The living faiths of mankind are different paths to the same goal, different ways up the supreme mountain whose summit is the divine reality.

If all men are the off-spring of God, it is unworthy to limit His love to those professing a particular creed. In the vast compass of His care every seeking soul may, within the limits of its spiritual capacity, find a saving grace. A religion worthy of the all-embracing God must harmonise all faiths in one universal synthesis. It is the Indian view that William Law expresses in these fine words: "There is but one salvation for all mankind and that is the Life of God in soul....That is God's gift to all Christians, Jews and Heathens. There is not one for the Jew and another for the Christian and a third for the Heathen. No, God is one. Human nature is one and salvation is one—and that is the desire of the soul turned to God."

25. *India's Role.*—India is the meeting place of the great religions of the world and will play an increasingly prominent part in the religious life of mankind and Indian students should have an idea of India's role in the world.

IV. Religious Education : Practical Measures.

26. *The Need for Religious Instruction.*—There are many who feel that morality can take the place of religion. We have to understand that the great virtues of loyalty, courage, discipline and self-sacrifice may be used for good or bad ends. These are essential for a successful citizen as well as for a successful villain. What makes a man truly virtuous is the purpose for which he lives, his general outlook on life. Virtue and vice are determined by the direction in which we move, by the way in which we organise our life. Unless morality is taken in a larger sense, it is not enough. If we exclude spiritual training in our institutions we would be untrue to our whole historical development. India has believed that when one has done his duties as a *grhastha*, a householder, has been a good father or mother, a good provider for the family, a good citizen, there is still the beauty and mystery of the universe, the meaning of life and death, the aspirations of the inner soul, that sad feeling of the wistful-minded that beyond the world of positive knowledge there is a realm of forces unseen which we can feel but never know completely.

27. *The Values of Religion.*—Four years ago a Committee appointed by the British Board of Education with Sir Cyril Norwood as Chairman reported its recommendations for the future of the British Secondary Schools. The Committee placed these words at the beginning of its report : "We believe that education cannot stop short of recognising the ideals of truth and beauty and goodness as final and binding for all times and in all places as ultimate values. Our belief is that education from its own nature must be ultimately concerned with values which are independent of time or particular environment, though realisable under changing forms in both, and therefore that no programmes of education which concern themselves only with relative ends and the immediate adaptation of the individual to existing surroundings can be acceptable."

28. *Gandhiji's Views.*—In June 1938, Gandhiji was asked about the place of religious instruction in the Wardha Scheme. He answered : "We have left out the teaching of religions from the Wardha Scheme of education because we are afraid that religions as they are taught and practised to-day, lead to conflict rather than unity. But, on the other hand, I hold that the truths that are common to all religions can and should be taught to all children". Again in *Harijan* (16-7-1938), answering a correspondent, he wrote : "I regard it as fatal to the growth of a friendly spirit among the children belonging to the different faiths, if they are taught either that their religion is superior to every other or that it is the only true religion. If that

exclusive spirit is to pervade the nation, the necessary corollary would be that there should be separate schools for every denomination with freedom to each to decry every other, or that the mention of religion must be entirely prohibited. The result of such a policy is too dreadful to contemplate. Fundamental principles of ethics are common to all religions. These should certainly be taught to the children and that should be regarded as adequate religious instruction so far as the schools under the Wardha Scheme are concerned."

29. *The Need for Religion in a Secular State.*—The fundamental principles of our Constitution call for spiritual training. There is no State religion. The State must not be partial to any one religion. All the different forms are given equal place, provided they do not lead to corrupt practices. Each one is at liberty to approach the Unseen as it suits his capacity and inclination. If this is the basis of our Secular State, to be secular is not to be religiously illiterate. It is to be deeply spiritual and not narrowly religious.

30. *Practical Measures.*—If the education of the intellect divorced from the perfection of the moral and emotional nature is defective, how can it be improved ? Religion can not be imparted in the form of lessons. It is not to be treated as one of a number of subjects to be taught in measured hourly doses. Moral and religious instruction does not mean moral improvement. Instruction is not education. What can be tested in an examination is acquaintance with theories. What we need is not the imparting of instruction but the transmitting of vitality. We must civilise the human heart. Education of the emotions and discipline of the will are essential parts of a sound system of education. Religion is a permeative influence, a quality of life, an elevation of purpose. Our institutions, if they are to impart religious vitality, should have simplicity and an atmosphere of consecration that permanently influence lives.

31. *Silent Meditation.*—A short period of silent worship or meditation, every morning before the class work starts, may well become an integral part of college life. For a few moments we may free the mind from the distractions of daily living and attend to the forces which determine the meaning and value of life. We will find the Supreme, the only Supreme, which it is possible for us to know, when we are taught to look within. " The spirit of man is the candle of the Lord. "[1] " Know you not that you are the temple of God and the spirit of God dwelleth in you " (St. Paul). These are variants of the famous text *Tat tvam asi*, that art thou. The individual is a soul and the purpose of education is to awaken the pupil to this fact, enable him to find the spirit within and mould his life and action in the light and power of the inner spirit.

[1] Proverbs. XX 27.

If religion means anything, it is that man is essentially a spiritual being. No one can be made moral or spiritual, unless these qualities are native to and inherent in man.

32. *Study of Great Books.*—The attempt to make students moral and religious by the teaching of moral and religious text-books is puerile. To instruct the intellect is not to improve the heart. Thought has an effect on life but there is the danger that we may make the thinking of morals and religions mechanical.

We must habituate the students to right emotions, induce in them the formation of good moral, mental and physical habits. Only what one accepts willingly becomes a part of oneself. All else is a mask.

How can we build the values into the human mind ? Our attempt should be to suggest and persuade, not command or impose. The best method of suggestion is by personal example, daily life and work and books read from day to day.

In the early stages, these books should contain not moral lessons but lives of great men given as things of supreme human interest—lives which exemplify the living of great thoughts and noble emotions. These books must be written with dignity, beauty and tenderness.

Education cannot ignore the great realities of experience and leave to chance their discovery by every young person. In the historic expressions of the fresh insights of great artists, we lift the hem of the garment of ineffable beauty. In the direct disclosures of the unutterable to the saint, we find persuasion and sustenance. In the moral claims and ethical formulations of the great social reformers, their upreaching spirit touches ours. Great literature sets fire to the highest emotions and prompts the highest ideals and aspirations. A study of great books, books that shame our smallness, that quell our fears, that fill us with hope is essential in the university course. The Harvard proposals [1] do not refer to religion on prudential rather than on educational grounds but they suggest a compulsory course in Humanities to be taken by every student during the first two years at college. They call it a study of the " Great Texts of Literature ". Its aim is " familiarity with as much of the greatest writings as can be read and pondered in the limited time available. A list from which a selection would be made might include Homer, one or two of the Greek Tragedies, Plato, the Bible, Virgil, Dante, Shakespeare, Milton, Tolstoy ".[2]

While in the secondary schools stories which illustrate great moral and religious principes are used, in college classes, ideas, events and leading figures associated with religious movements should be studied.

[1] *General Education in a Free Society.*

[2] p. 206.

33. *Study of Religious Scriptures.*—A reverent study of the essentials of all religions would be uniquely rewarding as a step towards harmony between religions long divided. This is in consonance with the spirit of our country. I-Tsing tells us that the University of Nālanda was the meeting ground of the different sects and creeds with their "possible and impossible doctrines". [1] Bāna's *Harsacarita*, which belongs to the same period refers to a meeting in Divākaramitra's hermitage of crowds of students, belonging to different creeds, Hindu, Buddhist, Jain, Lokāyata. In Akbar's Court there used to be friendly discussions among the followers of the different religions. In the revised syllabus of the training of teachers for Basic Schools, we find the following sentence :— "Reverential study of the different religions of the world showing how in essentials they meet in perfect harmony the Religion of Man." [2]

In the degree course it may be possible for us to read selections from books like the Bhagavadgitā, the Dhammapada, the Zend Avesta the Old Testament, The Gospel according to St. John, the Quran, and the Guru Granth Sahib. Our education must give the knowledge of some of the well-springs of faith and hope with which the human race has met its tragedies and guided itself for renewed striving.

We should not prescribe books which feel an obligation to prove that their religion is true and often that it alone is true. The answers should not be couched in sectarian terms and idioms. We are confronted by a universal need, by the yearning to transcend the narrow self into a world where the creation of more generous values is going forward. What is called religious instruction must bring awareness of the great historic insights. It must describe objectively that there have been and are answers which men have found to their most searching questions. It must arouse concern about those answers.

34. *Philosophy of Religion.*—When the students get acquainted with the great thoughts of great souls, they should be introduced to the problems of the philosophy of religion. What is the message of philosophy to the new world? We are trained in modern science and thought and our views must be able to satisfy the reflective and inquiring minds. We must do for our generation what the great thinkers of the past did for theirs. We must reckon with the intellectual doubts to which the modern world is prone and formulate views regarding the meaning and nature of the universe.

The absolute religious neutrality of the State can be preserved if in State institutions, what is good and great in every religion is presented, and what is more essential, the unity of all religions. It is in the detached atmosphere of an academic institution that we can

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[1]. p. 177.

[2]. p. 7.

study, analyse and eliminate the prejudices and misunderstandings which dis-figure inter-religious relations.

35. *Christian Missions.*—Many of the institutions run by Christian Missions have had a distinguished record of service and India recognises with gratitude the pioneer work done by them from the days of Carey and Duff. Even in the new conditions they will be encouraged to go on with their valuable work and teach the Christian religion to those who desire to learn it. After all, as Dr. Miller said years ago, there is no such thing as a purely secular education. In an address entitled "*Educational Agencies in India*" (1893), he thought that the kind of education given in Indian colleges and universities was in itself a *praeparatio avangelica.* "A certain not valueless preparation may be made when the light of Christ is reflected from the poetry, the philosophy and the history of a Christian land".[1] The Roman Catholic institutions do not trouble to give any specific religious teaching but rely for the propagation of Christian influence on the setting and the spirit of the institutions. A sympathetic study of non-Christian religions will tend to broaden, strengthen and universalise the bases of religions. Where the spirit of the Lord is, there is liberty, there is charity, there is unity. "The Divine unity", to quote Woolman's *Journal*— "in the human mind in different places and ages has had different names. It is deep and inward, confined, to no forms of religion nor excluded from any, when the heart stands in perfect sincerity. In whomsoever this takes root and grows, they become brethren."

36. *Recommendations.*—We recommend—

(1) that all educational institutions start work with a few minutes for silent meditation,

(2) that in the first year of the Degree course lives of the great religious leaders like Gautama the Buddha, Confucius, Zoroaster, Socrates, Jesus, Samkara, Rāmānuja, Madhva, Mohammad, Kabir, Nānak, Gāndhi, be taught,

(3) that in the second year some selections of a universalist, character from the Scriptures of the world be studied,

(4) that in the third year, the central problems of the philosophy of religion be considered.

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[1] Cp. Macaulay who wrote in 1836 these words :—

"No Hindu who has received an English education ever remains sincerely attached to his religion. It is my firm belief that if our plans of education are followed up, there will not be a single idolator among the respectable classes in Bengal thirty years hence. And this will be effected without any effort to proselytise ; without the smallest interference in their religious liberty ; merely by the natural operation of knowledge and reflection." Trevelyan.—*Life and Letters of Lord Macaulay.* I·455.

CHAPTER IX

Medium of Instruction

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44. Difficulties Involved. 45. Its Relation with Regional Languages. 46. Hindi cannot claim Superiority over Regional Languages. 47. Limited Use of Hindi. 48. Federal Language as the Second Language. 49. Its Advantages and Uses. 50. Place of Regional Languages. 51. Federal Language as Alternative to Regional. 52. Pockets of Minorities.

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53. Devanagari Script. 54. Other Scripts. 55. Measures for Developing Languages.

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IX. 58 Recommendations

I.—*The Problem.*

1. *The Problem of the National language.*—We have devoted much anxious thought to the problem of the medium of instruction in the universities and institutes of higher studies. No other problem has caused greater controversy among educationists and evoked more contradictory views from our witnesses. Besides, the question is so wrapped up in sentiment that it is difficult to consider it in a calm and detached manner.

For many years the current of national opinion has flowed with increasing force in the direction of the replacement of English by an Indian language. National pride legitimately felt hurt at the idea of an alien language occupying a dominating position in the field of national culture. Thus as the national struggle gathered force the desire for the adoption of an Indian language as the means of inter-provincial intercourse, of administration and of higher education gained in strength and volume. Naturally on the attainment of independence the ardent among us expected an immediate fulfilment of their desire, and they feel somewhat surprised and hurt when it is pointed out that the question is a complicated one and does not admit of an easy and immediate solution.

2. *The difficulty of the problem.*—The difficulty of the problem is inherent in the size of India and the character of her population; for, with the exception of China, there is no nation in the world of equal population or racial variety. Russia which comes next has about 180 million inhabitants compared to over 300 millions in India. Inevitably the diversity of languages is greater in India than elsewhere. But this very diversity calls for unity. To reconcile the claims of diversity with those of unity is a perplexing problem.

II.—*Indian Languages.*

3. *Chief languages of India.*—How great this diversity is will become plain by a reference to the figures of speakers of different languages. Now although there are hundreds of dialects in India, the principal languages which possess literatures of their own and therefore can claim to be fit media of instruction are not more than a

dozen. The following table taken from the Statistical Handbook published by the Constituent Assembly in 1947, and based on the census of 1931 gives the figures which are only illustrative, but cannot be regarded as strictly accurate for today :

1. Assamese	1,992,846
2. Bengali (undivided Bengal)	53,091,475
3. Oriya	11,133,583
4. Gujarati	10,832,278
5. Marathi	20,888,985
6. Panjabi (undivided Panjab)	15,811,545
7. Kashmiri	1,437,983
8. (*a*) Eastern Hindi	7,867,103
(*b*) Western Hindi	71,354,504
(*c*) Bihari	27,926,502
(*d*) Rajasthani	13,897,508
9. Kanarese	11,206,125
10. Malayalam	9,125,397
11. Tamil	20,227,545
12. Telugu	26,213,087

III.—Hindi, Hindustani and Urdu.

4. *Hindi and allied languages.*—Under item 8 we have brought together four language groups. Eastern Hindi, whose principal literary dialect is Awadhi, and Bihari comprising the three languages of Bihar—Maithili, Magadhi and Bhojpuri are closely allied ; so are Western Hindi and Rajasthani. The two groups again are closely related to each other. The dialects of Eastern Hindi and Bihari, namely, Awadhi and Maithili respectively possess rich literatures, so also the dialects of Western Hindi and Rajasthani. Among the branches of Western Hindi are Urdu, Braj Bhasha and High Hindi of which each one has produced many writers of genius. Their works are a valued national treasure.

5. *Hindi as literary language.*—The remarkable thing about the people who belong to these four groups is that whatever dialect may be the spoken tongue of the particular region in which they live all are adopting Western Hindi as their literary language. Thus for a population of nearly 12 crores inhabiting the regions from the confines of Saurashtra to Bengal and between the Himalayas and the Deccan plateau Western Hindi in its different styles is becoming the medium of polite intercourse.

6. *Forms of Hindi.*—Western Hindi in its literary forms, mainly because of the momentum of the large numbers which support them, has the best chance of recognition by free India as

the language of the State. Numerous people outside the middle region of India, where Hindi is recognised as the culture language, support its claim ; and since 1925 when the Indian National Congress adopted it, it may be said that its claim to be treated as the State language has received greater recognition. Unfortunately a fierce controversy has raged round the character of its literary form, and words Hindi, Hindustani and Urdu have become symbols of the conflict.

Why these styles of one and the same language should cause passionate disagreement is a matter which we are not called upon to discuss, nor is it our intention to adjudicate between the protagonists of the different views, for apart from other considerations, the Constituent Assembly which is seized of the issue will before long give its verdict which we hope will end the controversy.

IV.—Development of the Federal Language.

7. *Need of development.*—Whichever form of the Western Hindi is ultimately chosen as the official language of the Indian Federation, questions regarding its development to make it a fitting instrument of elevated discourse capable of expressing the widest range of thought will have to be tackled, for this language will eventually be used in the federal legislatures and the highest tribunals of justice, and in all federal administrative work. This will become the language of business, of philosophy and science, of the highest teaching and research.

8. *Inadequacy of High Hindi.*—Now none of its three forms is immediately ready for these purposes. Braj Bhasha which during a considerable part of the middle ages occupied the position of the language of culture through which the message of Bhakti spread over the whole land, and which was equally well adapted for ethics as for erotics, ceased to serve the new social needs which emerged in the nineteenth century. High Hindi which has replaced it in the affections of the people has made splendid strides and has proved its utility both for serious prose as well as for poetry. But it possesses little scientific literature and its technical vocabulary is rudimentary.

9. *Inadequacy of Urdu.*—In the wealth of its prose and poetical literature Urdu is not behind High Hindi or any other Indian language. It has actually been used as the medium of instruction for higher education in the Osmania University and for a number of years the Nizam's Government has been employing it as the

language of the State both for administrative and judicial work. Although a number of scientific treatises which are used for University syllabuses have been translated into Urdu, it is not possible to say that it possesses an adequate scientific vocabulary.

10. *Inadequacy of Hindustani.*—Hindustani, the third form of Western Hindi, which aspires to attain the status of the national language is still passing through the initial stages by which a spoken dialect becomes a literary language. Although it is the common denominator of Hindi and Urdu so far as spoken speech is concerned, it has not had adequate time and opportunity to grow a literature comparable with that of Hindi or Urdu.

11. *Need for borrowing words.*—High Hindi, Urdu and Hindustani suffer in differing degrees from a similar deficiency in vocabulary. Each one of them has its own solution for the removal of this deficiency. All three are borrowing languages, but unfortunately they have not been able to arrive at a common understanding regarding the sources from which they should borrow.

12. *Loans in High Hindi.*—The tendency of writers of High Hindi is to borrow exclusively from Sanskrit, and to take these words in the form in which they occur in the lending language. They also employ Sanskritic rules for preparing derivatives from these words. Their preference for Sanskrit words is not confined to neologisms, for even common words long in use, if they happen to be of Persian or Arabic origin, are replaced by Sanskrit words.

13. *Loans in Urdu.*—On the other hand, Urdu writers place their reliance on Persian and Arabic, and freely make use of Persian and Arabic grammatical rules for word building. In the context of India's nascent nationalism this does not seem to be in harmony with the spirit of the times.

14. *Loans in Hindustani—Its characteristics.*—Hindustani writers strive to steer a different course. In the first place they lay emphasis on the fact that it possesses a genius of its own which distinguishes it from Sanskrit on the one side and Persian and Arabic on the other. This genius is its phonetic system and morphological order. The sounds of Hindustani speech are peculiar to it and are not identical with those of any other language—Sanskrit, Persian or Arabic. Besides, the combination of these sounds in words is also peculiar and differs radically from that of other languages. It follows from this that loan words taken from Sanskrit, Persian, Arabic and other languages cannot fit into Hindustani unless they are modified to harmonize with its genius.

15. *Grammar of Hindustani.*—Again, the grammar of Hindustani is not identical with the grammar of Sanskrit, Persian or Arabic, although it is identical with that of Hindi and Urdu. It is, therefore, somewhat of an outrage to impose rules of these languages on the forms and derivations of Hindustani words.

16. *Hindustani and common speech.*—Secondly, Hindustani endeavours to maintain the raciness of the soil from which it has sprung. It has not only no aversion for the spoken words, no snobbish contempt for the speech of the common man ; it actually endeavours to renew and reinvigorate itself from the sources of living speech of the ordinary people.

17. *Origin of High Hindi, Urdu and Hindustani.*—Now High Hindi, Urdu and Hindustani are all derived from the same source, they have the same phonetic and morphological systems. The same Aryan speech which is enshrined in the hymns of the Vedas is the common mother of them all. This primary Prakrit became modified by the sixth century B.C. into middle Indo-Aryan Prakrits, among which Pali and Ardha Magadhi attained the position of literary languages, while another Prakrit spoken in the Madhya Desha (roughly the United Provinces of today) became transformed into Sauraseni Apabhramsha.

18. *Khari Boli.*—Passing through various stages these Prakrits developed into modern Indo-Aryan languages between 1000 and 1200 A.D. The Sauraseni Aprabhramsha gave rise to the dialect spoken round about Delhi and given the name of Khari Boli. By the same process was evolved the neighbouring and allied speech of Braj. These dialects received impetus from two factors (*i*) the establishment of Turkish rule, and (*ii*) the spread of Sufism and Bhakti. Urdu and Braj .Bhasha became the literary vehicles of the socio-religious changes set in motion by these forces.

19. *Urdu and Braj.*—Urdu was largely cultivated by Muslim writers and Braj Bhasha by the Hindus. But as time passed and they grew, Hindus adopted Urdu as their own, and Muslims Braj Bhasha. So that Urdu counts among its litterateurs numerous Hindus and among poets of Braj Bhasha some of the finest are Muslims. Although both Urdu and Braj Bhasha belong to the same family—in fact they are so closely related that Muhammad Hussain Azad and others looked upon them as identical, their growth was moulded in different milieus and they acquired their own special characteristics. But till the end of the 18th century there never was any conflict among these languages and Hindus and Muslims used and enjoyed them both.

20. *High Hindi.*—In the 19th century the seeds of communalism were sown. The plant had a lusty growth and ultimately its baleful shadow darkened every aspect of life. It was impossible for culture to escape the evil influence, and one of the consequences was the Hindi-Urdu controversy. Now that India is freeing herself of the octopus of communalism, it should be possible to consider the problem of language in all its bearings without the urgency of emotional pressures and political antagonisms.

21. *How to develop the Federal language.*—Under whatever name the Constituent Assembly chooses the official language of the Indian Federation it is undoubted that its basis will be the common substratum of the different styles of Western Hindi discussed above. In order to make it a worthy instrument capable of rendering all the service required, it will have to be enriched and developed. In this connection we urge consideration of certain points.

22. *Principle of assimilation.*—The first is in regard to the principle which should govern the necessary borrowings of words. In the world there are many languages which borrow words, but they do so without violence to their peculiar genius. The English language is a case in point. It has freely adopted words from Greek, Latin, French, German and other languages including Asian languages like Arabic, Persian and Hindustani. But every one of the loan words has been moulded into the matrix of English, so that excepting philologists ordinary people are hardly aware that they are using words of alien origin. Both writers of High Hindi and Urdu have in the past departed from this principle and the result is that these languages have tended to become learned jargons, languages not of the broad masses of men but of select coteries. Against such a development discerning scholars of language like Grierson have raised their voice. If we disregard their warning it will be at our peril.

A study of the history of our linguistic developments reinforces this lesson. Prakrits like Pali and Ardha Magadhi were living languages through which Buddhists and Jains propagated their gospels. But when they were overburdened with Sanskritisms to satisfy the taste of the learned groups of priests, they ceased to be current among the common people, their vitality, freshness and appeal dwindled and ultimately they were ousted from public favour. Braj Basha which was the vehicle of the religion of Bhakti retained its popularity for centuries and even today many crities consider it a more fitting medium of song and verse than High Hindi because of its naturalness and sweetness.

23. *Principle of inclusiveness.*—The second point for consideration is the desirability of retaining the words which have already entered into Indian languages from different sources. It will be unfortunate if the numerous English, French and Portuguese words which have become current are deliberately cast out. Equally unfortunate will it be if words taken from other languages which are on the tongues of millions of Indians are shunned because of their communal association.

24. *Dangers of exclusiveness.*—Arising out of this there is another important consideration. Some advocates of Hindi want it to rely exclusively upon Sanskrit for borrowing words. Now no one can doubt the close relationship between Sanskrit and Hindi both from the point of view of culture and philology, for the vast majority of Hindi words are derived from Sanskrit or to be more accurate from the Indo-Aryan Prakrit from which Sanskrit was developed. Nor need it be disputed that considerable additions to our vocabulary will and ought to be made from the same source. But there are dangers in exclusiveness which ought to be avoided. Slavish imitation is not good. It will make the langauge stiff and stilted. Variety is essential in order to maintain the natural flexibility and suppleness of Hindi and to make it acceptable to as large a number of people as possible. One of the main virtues of a spoken language is the ease of utterance which makes it easy to memorize. To encumber [illegible] difficult to pronounce is bound to hinder its [illegible] We must also beware of revivalist ideology. [illegible] or antique culture is not in accord with [illegible] Walter Moberly who was for many years [illegible] versities Grants Commission of Great Britain say[illegible] book "*The Crisis in the University*", "archaism is i[illegible]at is revived is never more than a *simulacrum*. It i[illegible]e, since the past always has grave faults, the reviv[illegible]ould be unpardonable."

25. [illegible]l *Terms.*—The discussion of the general question of loan words inevitably leads us to the special problem of technical terms, especially of natural sciences. This problem is common to all Indian provincial languages, and if a common solution can be found for all of them not only will it mean a great economy of effort, but also a long step in the direction of bringing the provincial languages nearer each other.

26. *Principles of choosing technical terms.*—Unfortunately among those who are engaged in the task of preparing scientific and technical vocabularies there are great differences of opinion concerning the principles according to which the vocabularies should be prepared

For example in the Osmania University where Urdu was adopted as the medium of instruction scientific terms were coined largely with the help of Arabic roots. On the other hand, the Nagari Pracharini Sabha and societies interested in the development of Hindi consider it to be essential that Sanskrit roots, words and particles should be employed together with Sanskrit rules of derivation. Their argument is that if European scientific and technical terms are built up on the foundations of European classical languages—Latin and Greek, India should follow their example and the Indian terminology should look to Indian classics for the same purpose.

27. *International Terms.*—A great many Indian educationists, however, differ from this view. A number of our witnesses expressed the opinion that our scientific terminology should be uniform and international. For instance, Dr. Mahajani, Vice-Chancellor of the Rajaputana University drew our attention to Newman's distinction between science and literature. According to Newman " science has to do with things, literature with thoughts ; science is universal, literature personal ; science uses words merely as symbols, literature uses language in its full compass, " and Dr. Mahajani expressed the view that for higher education in science subjects the language to be used should be one of the international languages—say English. Sri M. Ramanujam, Vice-Chancellor, Annamalai University, counselled the adoption of international nomenclature for scientific terms. Similar opinions were voiced by many other university men.

28. *Recommendations of the Central Advisory Board Committee of 1944.*—The Central Advisory Board of Education appointed in 1944 a committee to consider this problem. The Committee was composed of a number of eminent scientists and literary men, among them were Dr. Sir Shanti Swarup Bhatnagar, Dr. Amaranatha Jha, Dr. Sir Zia Uddin Ahmad, Mr. S. C. Tripathi.

The Committee's main recommendations were :—

(*i*) that for the development of scientific studies in India it is desirable to adopt a common terminology, and

(*ii*) that in order to maintain the necessary contact between scientific development in India and similar developments in other countries the scientific terminology for India should consist of—

(*a*) an international terminology, in its English form, which will be employable throughout India,

(*b*) terms borrowed or adapted from Indian languages.

The Board accepted the recommendations of the Committee.

These recommendations were reiterated by a Conference of Vice-Chancellors in May 1948.

29. *Need for Adopting International Terms.*—In Scientific education and research, India's position is not high among the nations of the world. Yet if India is to tackle successfully its tremendous problems of ignorance, poverty and disease on the one hand and of defence and security on the other, it is essential that scientific and technical progress of India should be speeded up. Any measure which affects adversely scientific standards or impedes scientific achievement or research will be disastrous. Again considering the terrifically fast tempo of world developments the factor of time cannot be ignored.

If India's education, especially in science and technology is to advance rapidly, we must put all other considerations aside and adopt a policy which will give us speedy results.

30. *Our Scientific Backwardness.*—Advocating as we do the desirability of employing Indian languages as media of higher education and recognising the need for speeding up the process by which the change may be brought about, we cannot shut our eyes to India's backwardness which necessitates her dependence upon the Western world. America and Europe are far ahead of us and their resources in trained personnel and money are so vastly larger that for many years Indian students and teachers will have to look to them for inspiration and assistance.

31. *International Character of Science.*—Then again it should be remembered that science is not parochial or national. It is universal. Its advance depends upon the contributions of scientific workers the world over. Scientific information must be easily available to all and must spread rapidly, if our progresss is not to be retarded. Under the urge of this universalism scientific vocabulary is fast becoming international.

32. *English Terms.*—It is true that no one has compiled statistics to show the percentage of scientific terms common to all or most of the European languages, and it may be admitted that in different branches of science the proportions would differ, nevertheless two facts cannot be gainsaid : first, that in a number of sciences, *e.g.*, Chemistry, Botany and Zoology terminology is largely international, and secondly, that the terms used in English because of the international position of English may for all practical purposes be considered international. [1]

[1] English is the mother tongue of the inhabitants of the British Isles, the United States of America, Canada, Australia, New Zealand, and South Africa. It is taught as second language in practically all European countries including U.S.S.R. and is widely known in Asia. Today it is the first language of world diplomacy and is understood by the largest number of persons. In a recent survey of articles published in the field of Analytical Chemistry it was found that 44% were published in English, 15% in French and 11% in Russian with German, Japanese, Spanish, Italian, Portuguese, Swedish, Dutch and Hungarian running from 6% to 8% each.

If for no other reason than the wide diffusion of English terms and the tremendous output of scientific literature in this language, we would advocate the desirability of adopting these terms as far as feasible into the Indian languages. But in fact there are very cogent considerations of practicability which inclined us to recommend this course.

33. *Scientific Terms.*—In the whole field of science it is estimated that there are between twenty to thirty lakhs of terms, and every year thousands of new ones are added. In Botany alone there are at least ten lakhs of scientific names, and in other biological sciences about as many. There are about 5½ lakhs named species of insects alone. In Organic Chemistry the number of known chemical compounds is in the neighbourhood of 5 lakhs, and about one and a half lakhs of these have names. In the fields of Mathematics, Physics, Geology, Mineralogy, Social Sciences, Psychology, Medicine, and Engineering (Civil, Mechanical and Electrical, Aeronautical, Naval etc.) there are lakhs of terms.

34. *Societies for Selecting Terms.*—The practical problem that faces us is the method to render these numerous terms in Indian languages. In the West there are a number of societies for sciences and they have committees dealing with scientific nomenclature, spelling and pronunciation. For example, take the field of Chemistry. There is an International Union of Chemistry which appoints associated national societies. For instance in U.S.A. there are the American Chemical Society and the National Research Council. The A. C. S. has several committees which deal with different divisions of Chemistry. The divisions are—Analytical and Micro-Chemistry, Organic Chemistry, Petroleum Chemistry, Physical and Inorganic Chemistry, Rubber Chemistry and Sugar Chemistry. The National Research Council has a General Committee, Sub-committees on Biochemical nomenclature, Inorganic nomenclature, Organic nomenclature, Steroid nomenclature, macromolecules nomenclature.

35. *Difficulties of an Independent Terminology.*—What applies to Chemistry holds in differing degrees for other sciences. Through the instrumentality of these numerous organisations, technical terms are adopted, revised and brought to the notice of the scientists of different nationalities. It is obvious that if India commits herself to a policy of a national and independent nomenclature she will have to set up an organisation on similar lines. But it is equally obvious that we have neither the men nor the means for undertaking this work. The number of scientists available is small and a large number of branches of science have no competent representatives among them. But it is impossible without expert advice on all

branches of science to coin terms which will be satisfactory. It is equally clear that neither the Government nor the people can afford the colossal expenditure involved. Even if for the sake of argument we assume that the task can be accomplished, its effect will be that Indian scientists will have to acquire two separate vocabularies, which will be a heavy intellectual burden, and which will most certainly retard India's progress.

36. *Solution—Adoption of English Terms and how to do it.*—The practical solution of this problem lies in adopting International or English technical and scientific terminology. When we suggest this we do not intend that the borrowing should be done indiscriminately. We are aware that there are terms which are strictly technical, that is, they have just one meaning, indicate one object or action or process, *e.g.*, the names of chemical compounds like 'hydrogen peroxide', or of botanical species like 'Ficus Religiosa,' etc.

There are other terms which are quasi-technical, that is, they have other uses besides the strictly scientific ones, *e.g.*, heat, light, magnetism, etc. We have quite a considerable number of terms used in a number of sciences which are taken from the common speech, for instance in Zoology names of common animals, in Botany of common plants. in Chemistry of common compounds, in Astronomy of some heavenly bodies, in Mathematics of old processes and in Medicine of ancient herbs or anatomical details.

Again, in social sciences like Economics, Politics, Ethics, etc. Indian languages have a number of terms of their own, and in philosophy there is a rich vocabulary in Sanskrit. It is not necessary or desirable that words should be borrowed for all these from outside.

Above all it is essential that the borrowed words should be properly assimilated, their pronunciation should be adapted to the phonetic system of the Indian languages and their spelling fixed in accordance with the sound symbols of Indian scripts.

37. *Uses of Federal Language.*—We are of opinion that the language whose main features we have discussed in the preceding paragraphs by whatever name it is called, should be adopted as the state language of the Indian Federation. It should be the official language of the Indian legislature, of the Federal judiciary, and of Indian diplomacy. It will be an advantage if this language is used in the Provincial High Courts along with the Regional or Provincial language or languages. We hope that it will be the language of inter-provincial intercourse, of all societies and institutions of all-India character, and of business and commerce.

V.—Suggested Alternatives : English and Sanskrit.

38. *Alternatives.*—In ancient India, scholars wandered from place to place, from one centre of learning to another, despite the many physical difficulties of communications. Language offered no difficulty as Sanskrit was the *lingua franca* for the world of learning, even as Latin was in the middle ages in Europe. It would be tragic, if in these days when means of travel are so much easier we increase the difficulties by raising linguistic barriers. Never was inter-provincial understanding so urgently necessary as it is today and nothing can further this better than an exchange of ideas among the highly educated. Owing to the shortcomings of Hindi its undeveloped character and its provenance, some people, are doubtful whether such a role should be assigned to it, and therefore they put forward alternatives to it. Some advocate the continuance of English as the State language of India and as the language of higher education. Others draw attention to the claims of Sanskrit.

39. *English.*—Now it is true that the English language has been one of the potent factors in the development of unity in the country. In fact, the concept of nationality and the sentiment of nationalism are largely the gift of the English language and literature to India. This debt alone is so considerable, and the fear that in the absence of the binding force of English reversion to old differences and divisions is so great, that many advocate the retention of English as an instrument for the continuance and fostering of the unity which it has helped to create. But in addition English has supplied us with the key to the fundamental ideas of modern civilization, to modern science and philosophy, and what is even more important, for all practical purposes English will continue to be our principal means of maintaining contact with the outside world. Besides, English is an international language and if catastrophic events do not alter the present posture of world forces it will soon be the world language.

These are weighty reasons. English has become so much a part of our national habit that a plunge into an altogether different system seems attended with unusual risks. It appears to us, however, that the plunge is inevitable. English cannot continue to occupy the place of state language as in the past. Use of English as such divides the people into two nations, the few who govern and the many who are governed, the one unable to talk the language of the other, and mutually uncomprehending. This is a negation of democracy.

40. *Objections to English.*—It is educationally unsound to make a foreign tongue the means of acquiring knowledge. Dr. Hans, Lecturer in Comparative Education in the London University, points out in his recent book the serious drawbacks in adopting a foreign language as a medium of instruction. He says, " before entering school the pupils have acquired a proficiency in their mother tongue, have built up a vocabulary covering most of the objects of sense impressions and their daily activities. At school they have to superimpose on this basis a language of ideas and abstract relations, expressed entirely in a foreign medium. Their minds become split into two water-tight compartments, one for ordinary things and actions expressed in their mother tongue, and another for things connected with school subjects and the world of ideas expressed in a foreign language. As a result they are unable to speak of their home affairs in the school language and about learned subjects in their mother tongue."

And not only the individual but the nation develops a split consciousness, the " Babu Mind". This is what happened to India under British rule. We have paid a heavy price for learning through English in the past. Instead of laying stress upon thinking and reasoning we emphasized memorising, in place of acquiring knowledge of things and realities we acquired a sort of mastery over words. It affected originality of thought and development of literature in the mother tongue. We have impoverished ourselves without being able to enrich the language which we so assiduously studied. It is a rare phenomenon to find the speaker of one tongue contributing to great literature in a different language. The paucity of great literature which is the inevitable consequence of devotion by the educated to a language other than their own is a double loss--intellectual and social, for great literature is a powerful factor in fostering culture, refinement and true fellowship. Whatever the advantages of English and the immediate risks in a change over to the new, the balance of advantage on a long view of the matter lies in the change. But the position which English should continue to occupy in our system of education in the period of transition and after, we will indicate later in the chapter.

41. *Sanskrit.*—The claims of Sanskrit are even more insistent and make a very strong appeal to our hearts. For the vast majority of Indians this ancient, truly great, and amazingly refined language enshrines the hallowed traditions of the past and the living injunctions of their faith. For most of the highest values of life and the most elevating rules of conduct are contained in the sacred scriptures whose study is a part of daily duty and an obligation of religion. Hence although it is true that Sanskrit is not today a spoken language and

perhaps never was the language of the masses as the evidence of the dramas demonstrates, we live in a moral and mental climate in whose creation Sanskrit has been a powerful factor.

Apart from its special attraction for the Hindus, the Sanskrit language, its grammar, poetry, and vast and varied literature which compare favourably with the products of other languages past and present, are worthy of attention by all those interested in human culture. Its discovery by Europe inspired many of its savants, writers, poets and philosophers with unusual enthusiasm early in the nineteenth century and undoubtedly its study has a special claim upon all Indians from the point of view of the human mind's achievements embodied in this language.

42. *Objections to Sanskrit.*—But while the greatness of Sanskrit ought never to be in dispute and its rightful title to India's special devotion should not be in doubt, we cannot help feeling that the proposal to make Sanskrit the state language is not sufficiently realistic. Sanskrit was the state language of India in certain periods of her history, but those were times when the state was an absolute monarchy. Sanskrit never could be a popular language because of its refinement and extreme complexity. Its study and acquisition require many years of devoted labour, it does not yield mastery over itself to those who serve it perfunctorily. Today, with the exception of some very learned families, only scholars and among them mostly those who have been trained according to the old and traditional ways can use it fluently in conversation and discourse.

If Sanskrit is to be the language of higher education a very considerable proportion of the time of the learners will have to be spent in acquiring facility of reading and speech, and the period of school and college education will be considerably increased. And even if success is achieved in training students receiving higher education to use Sanskrit—a much more difficult language than English, the fact remains that like the result of the use of English, a gulf will be fixed between the educated in Sanskrit and those larger numbers who will never be able to proceed to the universities. The latter will be deprived of that direct participation in the State affairs without which no democratic system can function effectively.

Again, serious practical difficulties stand in the way. If Sanskrit is adopted as the medium of higher education, so far as scientific vocabulary is concerned there will be no gain, for Sanskrit is not much better in this respect than modern Indian languages. A fresh complication will be that Sanskrit vocables, words and roots which can retain their strictly technical meaning in the modern Indian

languages because they are new words for them, cannot do so in the Sanskrit language because most of them will be common words or words having a non-technical significance. To use them with technical meanings will be an additional difficulty.

Even more serious than this is the problem of preparing books for higher studies. Obviously such books can only be written by experts in various branches of science. Unfortunately it is impossible to find high class scientists and experts who are masters of Sanskrit language and who are capable of producing specialist treatises in Sanskrit. Scientists taught through English do not know enough Sanskrit even though they may have studied it at some stage in their academic career, and Sanskrit Pandits are rare who have adequate knowledge of any branch of science. Until, therefore, a new generation of educated men equally well versed in Science and Sanskrit has been trained, the adoption of Sanskrit as the medium of higher education must remain outside the pale of practical politics.

43. *Hindi the only alternative.*—There is no other alternative but to choose a language spoken by a high percentage of the people of India, to give it the status of state language, and to develop it for the chosen task. For reasons which have been stated above the language spoken and understood by more than 120 millions of our countrymen, the midland tongue, the basic Khari Boli dialect, designated Hindi or Hindustani, has to fulfil this destiny. When Hindi assimilates terms in popular usage and adopts scientific and technical terms which are used internationally, it will grow richer and fuller than it is today and will not be distinguishable from Hindustani. It is such a development that we envisage for Hindi, if it is to become the Federal language.

VI.—Federal and Regional Languages

44. *Difficulties Involved.*—But to choose the language of the Indian Federation is not tantamount to the solution of the problem of higher education. For no sooner is this problem settled, than a fresh crop of difficult problems arises. Granted that Hindi will be the Federal language of India, how will it affect the participation in the affairs of the Federation of those whose mother tongue is different ? Members of the Federal legislature will be required to speak in the Federal language ; Federal acts, statutes, ordinances, orders, resolutions, proclamations, reports, budgets, etc. will issue in the Federal language ; members of the Central Government, officials of the Central Secretariat, judges of the Federal Court, will employ it. How will all this affect the personnel of the legislature, the executive and the judiciary ? Will it give to those whose mother tongue is Hindi an undue advantage and a disproportionate influence in the affairs of the State ? Will this arrangement deprive the Central Government

of the valuable services of the intellectual elite of India irrespective of the regional and linguistic provenance ?

45. *Its relation with regional languages.*—Another set of questions which press for answer concern the relationship of the Federal language with the regional languages. What will be the language of provincial governments, provincial legislatures, provincial High Courts, the language of intercommunication between the Centre and the provinces ? What will be the medium through which higher education will be imparted in the regions and the provinces ? And in what language shall be conducted the competitive examinations for Provincial and Central services ? In case Hindi is the language of the Central institutes of higher learning, science and technology, how would they maintain their all-India character in teachers and scholars ?

The one advantage which English possesses over Hindi or any other Indian language is its complete freedom from local biases and entanglements. This indifference to particularism is possessed by Sanskrit also. But for the reasons stated earlier, English and Sanskrit cannot be adopted as media of instruction. We have, therefore, to find a solution for the questions posed above which will satisfy the two requirements of federal unity and local variety. Through the federal language Indian solidarity must be secured and strengthened, but without sacrificing the educational and cultural advantages of the use of the mother tongue at all stages of education.

46. *Hindi cannot claim superiority over regional languages.*—If the matter is looked at in this way, the solution proposed by some, that the Federal language should take the place of English and therefore should be recognised as the medium of higher education all over India, and the language through which all administrative business should be transacted, has to be discarded. For Hindi does not enjoy in India such natural ascendancy over other provincial languages as to incline inhabitants of these provinces to accept a secondary position for their language in their own regions. In the U.S.A. although there are peoples of a number of nationalities having their own mother tongues, English commands so overwhelming a prestige that no other language can come into rivalry with it. In the U.S.S.R. Russian holds a similar position. In spite of the fact that the Soviet rulers have recognised and fostered national dialects and developed them to serve as media of higher education, and of local administration and have not regarded lack of adequate knowledge of Russian as a bar to government service or political advancement, Russian because of its inherent strength has universal respect and allegiance. In Canada, on the other hand, French and English, because of their equal claims as means of expression, have to be

treated on a basis of equality. In South Africa Africaans (a form of Dutch), and English, receive the same treatment. In the case of Switzerland although the number of German speaking citizens is much larger than that of speakers of French and Italian, no one language is given a superior position; all three are used for all State purposes and education is imparted in each region in the language of that region. The Swiss are so tolerant and liberal in this matter that they have recently recognised Roumansch, the language of a small minority of 75,000 persons, as one of the State languages. In Belgium Walloon and Flemish which have close affinities to French and Dutch are equally recognised by the State for national purposes.

Hindi is the language of the minority, although a large minority. Unfortunately it does not possess any advantages—literary or historical, over the other modern Indian languages. Tamil, for instance, is hallowed with age and possesses a literature which vies with that in Sanskrit. Marathi goes back to the thirteenth century and Bengali claims a continuous growth since the ninth. Urdu was in use in the 15th century and Braj in the 16th. Urdu and Braj had a nation-wide vogue in the middle ages. High Hindi, on the other hand, is just a century and half old. Braj and Avadhi both produced mighty genuises, in High Hindi there is hardly anyone to compare with them. Tagore in Bengali and Iqbal in Urdu are names to conjure with. High Hindi awaits writers of their stature.

47. *Limited use of Hindi.*—In the circumstances, while national needs compel the recognition of Hindi (Hindustani) as India's Federal language, it is difficult to assign to it the role played by English. What, then, shall be the language policy for all India? The Federal language will be used for all Federal activities–cultural, educational and administrative. The regional languages will occupy a similar position in the provinces and units of the Federation. But in order to enable every region and unit of India to take its proper share in the Federal activities, and to promote interprovincial understanding and solidarity, educated India has to make up its mind to be bilingual, and pupils at the higher secondary and university stages will have to know three languages. Every boy and girl must obviously know the regional language, at the same timé he should be acquainted with the Federal language, and should acquire the ability to read books in English.

These are not extravagant or extraordinay requirements. In the schools of Holland most pupils learn four languages, Dutch, German, French and English, in Switzerland the learning of three is common. Not long ago the English schools required knowledge of both Greek and Latin together with a modern language—not English. Greek has now been dropped as a compulsory subject. But most

students at the universities are required to show a knowledge of one of the classical languages and one of the modern European languages. Educated Indians today learn English besides their mother tongue.

48. *Federal Language as the second language.*—We would like to see the introduction of the Federal language in all schools at the secondary stage, and the teaching should be continued at the university. This will ensure a general knowledge of the Federal language of use for all practical needs. In addition, for those who desire to attain greater mastery over the Federal language facilities should be provided for intensive study. In the Hindi speaking regions it will be an advantage if students are required to learn another Indian language. This is proposed not merely to compensate for the efforts of students in other regions, but also to secure the eligibility of youngmen of this region to serve in other regions and to provide an adequate supply of those Hindi speaking persons who can mediate between the provinces.

49. *Its advantages and uses*—If bilingualism is fostered properly, then the problems which arise from the replacement of English by the Federal language will be gradually solved. In every province there will be a sufficient number of persons who will have the requisite knowledge of the Federal language to participate in Federal functions. So far as judicial work is concerned, it should not be difficult to so constitute the High Courts and the Federal Court as to make it convenient for the advocates to address the Judges in the Federal and one or two regional languages. In the Federal legislature the practice of international conferences may be followed, where speeches are made in different languages, but are simultaneously translated into other languages and broadcast on phones. In selecting officers for the Federal services it should not be beyond the ingenuity of the Public Services Commission to devise their examinations so as to give the same chance of selection to candidates belonging to different linguistic regions. Selected candidates should during their period of probation, have intensive training in the Federal language. In this connection it may be suggested that the old system of seconding probationers to different provinces, irrespective of their original province, should be revived, and in all-India services officers should be liable to serve in any province chosen by the Government.

It is of the utmost importance that the services of talented men and women from all provinces should be available to the Centre, and no province should have any ground for legitimate grievance that it is neglected. Opportunities for preferment in the fields of politics, economics, administration, etc. should be equally open to all, and no place of honour or profit should be closed to merit merely on the score of language.

50. *Place of regional languages.*—Higher education is the door through which some of the educated youth will pass into Federal services and federal politics. But much the greater proportion will remain in the provinces. Both from the point of view of education and of general welfare of a democratic community it is essential that their study should be through the instrumentality of their regional language. Education in the regional language will not only be necessary for their provincial activities, it will enable them to enrich their literature and to develop their culture. Educated naturally in the regional language, they ought to achieve higher standards of learning and of thought, and should be able to give a powerful stimulus to research and extension of the boundaries of knowledge. Equipped with the requisite knowledge of the Federal language, the Provincial students will have no difficulty in joining institutes of an all-India character, and the provincial scholars in undertaking to teach them.

51. *Federal language as alternative to regional.*—Although we recognise that in the near future the regional languages will be the principal media of instruction at all stages in all provinces, we consider it desirable that universities should have the option to use the Federal language as the medium of instruction either for some subjects or for all subjects. In case both languages are employed, how the two will be combined is a matter which the institutions trying the experiment should be allowed to settle. No obstacles should be placed in the way of colleges or universities which desire to make such an experiment. Rather in view of the fact that an increasing number of universities and colleges is likely to be established in the near future, it may be wise to encourage such experiments.

52. *Pockets of minorities.*—The policy that the language of the region should be the medium of education at all stages in the region has certain obvious limitations. There are in India a number of Provinces which contain pockets of inhabitants speaking a language different from the regional language. In such cases the right policy is to allow unreservedly the use of the mother tongue for basic education and if the numbers are adequate for secondary education also, introducing the regional language gradually in the upper grades at the School as the child grows older, and making it the medium of instruction at the university stage.

VII.—Script.

53. *Devanàgari Script.*—The question of script is linked with that of languages. Considerations of convenience, economy and efficiency clearly indicate that for the Federal language, which will be used by the State for all administrative purposes, one script should be used. Devanàgari which is employed by the largest number of

people in India appears to be the proper choice. Some eminent educationists as well as public men, however, point out that Nagari script has serious defects. It is not easy to write because of the complicated forms of its letters. In printing the great multiplicity of its types creates difficulties in composition on printing machines especially linotypes. It does not lend itself easily to typing. Therefore they recommend the Roman script which is widely used in the world. At the Conference of the Vice-Chancellors held at Delhi in May 1948, a substantial section was in favour of the adoption of the Roman script for the Federal language. It was pointed out that during the Second World war the Indian army recruited from all the provinces of India was successfully instructed through the Roman script, which still continues in use.

54. *Other Scripts.*—It is not easy to brush aside these arguments, for the advantages of adopting a world script are considerable, yet in the totality of circumstances existing in India, we are of opinion that the Federal language should be written in Nàgari characters. We are aware that efforts are being made to improve it, and we hope they will be continued till its glaring defects are removed, but it is not desirable to replace it with an entirely different script. This does not mean that the State in order to give due publicity to its acts should not utilize other scripts. While Nàgari should remain the principal script, Governmental laws, proclamations, decrees, resolutions etc. should also be published in other scripts. The Urdu script has been widely used throughout the centuries for Hindi (Hindustani and Urdu) and millions of our countrymen are familiar with it. It will be a distinct advantage to use it as a secondary script. Other scripts and languages should also be employed so that the state's publicity may reach every corner of the land.

55. *Measures for developing languages.*—In order that the change from English should not be delayed, it is necessary that the Government of India and the Provincial Governments should immediately devise measures to develop the Federal and the regional languages. In the first place a board consisting of scientists and linguists should be appointed to prepare a scientific vocabulary of words which are common to all the Indian languages. This board should have the assistance of paid scholars to carry out the policies laid down by them. The Board should also arrange for the preparation of books in different sciences, which should be rendered into all Indian languages. Government should provide adequate funds for these purposes.

Secondly, provincial governments should take steps to introduce the teaching of the Federal language in all classes of higher secondary schools, in degree colleges, and in universities.

It is our belief that if the suggestions we have made for the development of Indian languages, and the lines we have indicated for this, are followed, a day will soon come when linguistic barriers will be lowered and Indians of different provinces will find little difficulty in understanding one another.

VIII.—Place of English.

56. *Need for Caution.*—But some time will elapse before such a consummation is reached. During the interval, whose length depends upon the earnestness of Governments, what is to be done? It is neither feasible nor desirable to create a void in the Centre by immediately abandoning the language which is in use. English will have to continue as the medium for Federal business till the provinces are ready for the change and the provincial educational institutions have spread the Federal language adequately. Ultimately, however, English will disappear from the scene as the language of the State, Central or Provincial.

57. *Study of English.*—English, however, must continue to be studied. It is a language which is rich in literature—humanistic, scientific and technical. If under sentimental urges we should give up English we would cut ourselves off from the living stream of ever growing knowledge. Unable to have access to this knowledge, our standards of scholarship would fast deteriorate and our participation in the world movements of thought would become negligible. Its effects would be disastrous for our practical life, for living nations must move with the times and must respond quickly to the challenge of their surroundings. English is the only means of preventing our isolation from the world, and we will act unwisely if we allow ourselves to be enveloped in the folds of a dark curtain of ignorance. Our students who are undergoing training at schools which will admit them either to a university or to a vocation must acquire sufficient mastery of English to give them access to the treasures of knowledge, and in the universities no student should be allowed to take a degree who does not acquire the ability to read with facility and understanding works of English authors. We must take into account our Yugadharma. A sense of the oneness of the world is in the making and control over a medium of expression which is more widespread and has a larger reach than any of our languages to-day will be of immense benefit to us.

IX.—Recommendations.

58. We recommend :—

1. that the Federal Language be developed through the assimilation of words from various sources and the retention of words which have already entered into Indian languages from different sources, thereby avoiding the dangers of exclusiveness.

2. that international technical and scientific terminology be adopted, the borrowed words be properly assimilated, their pronunciation be adapted to the phonetic system of the Indian language and their spelling fixed in accordance with the sound symbols of Indian scripts.

3. that for the medium of instruction for higher education English be replaced as early as practicable by an Indian language which cannot be Sanskrit on account of vital difficulties.

4. that (*i*) pupils at the Higher Secondary and University stages be made conversant with three languages,—the regional language, the Federal language and English (the last one in order to acquire the ability to read books in English) ;

and (*ii*) Higher education be imparted through the instrumentality of the regional language with the option to use the Federal language as the medium of instruction either for some subjects or for all subjects.

5. that for the Federal language one script, Devanagari, be employed and some of its defects be removed.

6. that immediate steps be taken for developing the Federal and Regional languages :

   (*i*) A Board consisting of scientists and linguists be appointed to prepare a scientific vocabulary of words which will be common to all Indian languages and also to arrange for the preparation of books in different sciences to be rendered into all Indian languages ;

   (*ii*) Provincial Governments be required to take steps to introduce the teaching of the Federal language in all classes of Higher Secondary Schools, in Degree Colleges, and in Universities ;

7. that English be studied in High Schools and in the Universities in order that we may keep in touch with the living stream of ever-growing knowledge.

CHAPTER X

EXAMINATIONS

I.—The Problem.

1. Chronic Nature and Magnitude of the Problem. 2. Reform Essential.

II.—Objective Tests.

3. Conditions of a Good Examination. 4. Examinations and the Process of Education. 5. Various Kinds of Tests : Intelligence and Achievement Tests; Aids in Selection and Counselling of Students. 6. Tests as Aids to the Teacher and as Checks on Quality of Work. 7. Hall-Mark of Attainment. 8. Advantages of Objective Tests. 9. Position in the United Kingdom.

III.—Essay-Type of Examination.

10. Place of Essay-Type of Examination.

IV.—Recommendations.

11. Recommendations regarding Objective Examinations. 12. Recommendations for the Correction of Evils now Existing in the Examination System.

I.—The Problem.

1. *Chronic Nature and Magnitude of the Problem.*—For nearly half a century, examinations, as they have been functioning, have been recognized as one of the worst features of Indian education. Commissions and Committees have expressed their alarm at their pernicious domination over the whole system of education in India. The obvious deficiencies and harmful consequences of this most pervasive evil in Indian education have been analysed and set out clearly by successive Universities Commissions since 1902, by a Government Resolution as far back as 1904 and by a Committee of the Central Advisory Board of Education in recent years. With most of their criticism we are in agreement and do not wish to dilate on the patent defects and dangers of this system. We only note that while the magnitude of the problem has been growing at an alarming rate nothing constructive in the way of reform has happened. The Calcutta University Commission (1917-19) showed concern at the rising numbers involved in these examinations. The numbers have gone on increasing while the character of examinations has remained unchanged. The total number of candidates for the matriculation examination for India as a whole in 1904 was 23,800 in round numbers ; in 1944, 36,742 candidates appeared at this examination conducted by the Calcutta University alone ; Bombay had in that year 32,056 candidates, Madras 30,588, and

Allahabad 22,262. In 1947 the number had increased to 60,841 at Calcutta, 41,092 at Bombay, 43,823 at Madras, and 33,923 at Allahabad. The total number of candidates for Intermediate and Bachelor's examinations in the Faculties of Arts and Science for all Indian universities was just under 11,000 in 1904 ; in 1916 it had risen to just under 25,000 ; in 1925 the number of candidates for the intermediate examination alone was a little over 30,000 ; in 1937, a little over 35,000 and in 1947, it had gone up to over 80,000 in the Indian Dominion exclusive of East Punjab. The number of candidates for the Bachelor's examination has gone up with similar rapidity. It was 12,500 in 1927, 17,000 in 1932 ; and rose to 32,400 in 1947 in the Indian Dominion exclusive of East Punjab. An unsound examination system continues to dominate instruction to the detriment of a quickly expanding system of education. In our visits to the universities we heard, from teachers and students alike, the endless tale of how examinations have become the aim and end of education, how all instruction is subordinated to them, how they kill all initiative in the teacher and the student, how capricious, invalid, unreliable and inadequate they are, and how they tend to corrupt the moral standards of university life.

2. *Reform Essential.*—We are convinced that if we are to suggest one single reform in university education it should be that of the examinations. We advisedly say reform although we know that, in India as elsewhere in the world, dissatisfaction with examinations has been so keen that eminent educationalists and important educational organisations have even advocated the abolition of examinations. We do not share that extreme view and feel that examinations rightly designed and intelligently used can be a useful factor in the educational process. If examinations are necessary, a thorough reform of these is still more necessary.

II.—Objective Tests.

3. *Conditions of a Good Examination.*—A good examination should satisfy certain essential conditions. It should, in the first place, have validity. It should be able to measure what it seeks to measure. The purpose of the examination must be clear and explicit. It must be reliable ; it must efficiently measure what it does measure. It must be adequate ; it should sample sufficiently widely, so that the resulting scores are representative of relative total performance in the areas measured. It should be objective ; it should effectively eliminate the bias or subjective opinion of the person who marks it. It should be easy to administer, easy to mark, easy to interpret.

We suggest the introduction of such valid, reliable, adequate objective examinations in the universities of India at the earliest possible time. Without this there is danger that Indian higher education will fall into chaos.

Fortunately there is a wealth of scientific work on testing, measurement, evaluation and appraisal done in the West, and especially in the United States, which can help us very greatly in devising objective methods of testing intelligence, aptitude, achievements as well as personality traits. The discovery and utilisation of statistical concepts and techniques have helped the growth during the last three decades of an elaborate science of mental measurement which we would do well to harness to our pressing educational needs. The significant work of the Committee on Measurement and Guidance of the American Council on Education has greatly clarified educational thinking on problems of testing and student counselling. The Committee's work on such projects as the American Council's Psychological Examination, the Cooperative Test Service, aptitude measurements, and its extensive research on Primary Mental Abilities are contributions of outstanding value for higher education. State-wide objective testing programmes for high schools and colleges have also been worked out by several states in the U. S. A., notably by Iowa, Ohio, Minnesota and Wisconsin. All this material awaits intelligent study, modifications and adaptation to meet the crying need of reforming our system of examinations.

4. *Examinations and the Process of Education.*—The chief purpose of the present examinations is not organically related to the actual process of education. They are a means to the giving of a hall-mark of competence which employers, public and private, may recognise as a more or less reliable indication of the possession of certain intellectual and, perhaps, moral qualities and of certain types of knowledge and skill. A university degree is a kind of passport for jobs. With the great economic pressure due to the prevailing poverty in the country, the insistence on a university degree as the minimum requirement even for posts of minor officials and clerks has put a premium on a number of evils which have come to be associated with the examination system. It has subjected teaching to the examination, made it almost impossible to provide true education and to develop wider interests, and has created temptations of cheating, corruption and favouritism. The obsession to secure, as it were, a ticket in the lottery of job-securing has over-shadowed the educational purposes which a good examination can serve.

We feel that tests and examinations should be designed chiefly with educational ends in view. They should help in the choice of

students, in the counselling and guidance of students, in measuring their progress, in diagnosing present conditions and in devising remedial measures and finally in assessing educational achievement. There are a number of such tests available and we feel that their introduction in India, with the necessary modification and adaptation, will prove a great boon to Indian education.

5. *Various Kinds of Tests: Intelligence and Achievement Tests ; Aids in Selection and Counselling of Students.*—There are tests available which can help effectively in weeding out those who seem conspicuously to lack the general intellectual ability to cope with the work ahead. Besides these tests of general ability there are tests which break down " general intelligence " into a pattern of abilities and help in discovering a student's strong and weak points. These can help the student to find out the fields in which he is at his best and to plan his programme of work.

Then, tests are available to measure what and how much the student has learned at school or elsewhere before he came to college. These tests of achievement can measure knowledge of facts and skills in literature, science, fine arts, mathematics, history, social studies and current social problems. The discovery of a superior or a poor high school background can give the staff and the student valuable help in the choice of subjects and in emphasizing certain aspects of the chosen programme.

The problem of selecting students for higher studies and of intelligent counselling in the choice of their fields of study is of vital importance and should be tackled in a scientific way. With rapidly growing numbers of those receiving education, and with the inevitable diversification of high school education, the importance of this problem will ceaselessly grow. The universities will perform a service of national significance by applying themselves to its solution in right earnest.

For use in selection of students who are leaving school and seeking admission to colleges two types of tests have been used in conjunction in the United States. These are (1) Intelligence or Psychological Tests (2) Achievement Tests.

1. Intelligence Tests : The General Intelligence Tests are intended to evaluate native intelligence and have but slight reference to knowledge or skills. They seek to measure ability to learn or to adapt to new situations. Since intelligence cannot be directly measured these tests attempt to measure it by measuring

the individual's ability to react to fragments of his environment. Intelligence tests sample widely from fields of experience common to all persons subjected to the test. There always is a factual element involved in these tests, but it is one that is so commonly known and at such low level of difficulty that all persons, with the rarest of exceptions, can be expected to possess it. The tests attempt to measure the abilities to see relationships, to infer, to compare, to contrast, or otherwise handle this factual material.

There are individual intelligence tests and group intelligence tests. The individual ones, which are comparatively more accurate tools of measurement, are mainly patterned upon the Binet-Simon tests produced in France between 1905 and 1911 and provide a scale on which the persons tested can be placed at some point in a wide range extending from genius to morons. The Binet scale has been adapted and revised by many other experts. A notable variation was that by Terman of Stanford University in 1916, known as the Stanford-Revision. The American army began to employ objective tests in World War I for the selection and assignment of men in the service. Group tests were devised and administered by expert educationists borrowed from the universities. The most widely used is the American Council on Education Psychological Examination for High School Students. Most colleges and universities in the United States make use of this test for admission though many have tests of their own.

Apart from these tests of what is called general intelligence, the colleges and universities in the United States are making extensive use of specific intelligence testing by means of what are called " educational aptitude tests ". They are tests not of knowledge or skill but of the ability, at a certain point of time, to acquire knowledge or skill under proper conditions.

A great deal of successful work in testing aptitudes has been done for various businesses and industries by educational experts to measure the untrained individual's potentiality for acquiring vocational skills in order to make a judicious selection of their employees. Similar tests have been extensively used in various countries for recruitment to the various tasks in the armed forces.

II. Achievement Tests : These are used to discover the extent of knowledge or skill which has been acquired and retained by a student. Aptitude tests discover future possibilities ; achievement tests reveal past attainment. There are general achievement tests as well as tests of achievement in specific subject matter and performance areas. The general battery-type of achievement

test helps to give a picture of the total instructional situation. It gives a profile chart indicating points of strength and weakness which can be further analysed for diagnostic and remedial work. There are a number of such general achievement tests available at present covering the principal areas of education. The Iowa Tests of Educational Development and the Cooperative Achievement Tests deserve special mention. The Iowa tests have been devised for a state-wide testing programme for measuring pupil development in the attainment of the ultimate objectives of secondary school education. They test (1) understanding of basic social concepts (2) ability to do quantitative thinking (3) ability to write correctly (4) general proficiency in the natural sciences (5) ability to interpret reading materials in the natural sciences (6) ability to interpret reading materials in the social sciences (7) ability to read literary materials (8) ability to use important sources of information (9) ability to recognise important word meanings. The Cooperative Tests of Achievement are intended for use at the senior high school level and consist of tests in three phases of English and reading, and in the social studies, natural sciences, and mathematics. The Cooperative Test Service was initiated by a committee of the American Council on Education in 1930, made possible by a grant of $500,000, distributed over a period of ten years, by the General Education Board. It represents a widespread movement enlisting the cooperation of educationists in many fields and institutions in all parts of the United States. Those who wish to study this movement in detail will find volumes devoted to an exposition and evaluation of the Cooperative Test Service listed in the bibliography in Appendix L.

These objective tests of various kinds for various purposes have distinct advantages which would justify their extensive use in India. Specimens are to be found in Appendix M.

6. *Tests as Aids to the Teacher and as Checks on Quality of Work.*—Besides helping in the selection and counselling of students, tests can be a great help to the teacher. Fruitful and competent teaching depends very largely on knowing the facts of student accomplishment. To know facts one should be able to measure objectively. Measurement, testing and appraisal are becoming essentials of effective educational procedure. The teacher can make use of standardised tests, informal objective examinations or an essay-type examination. The important thing is that he should satisfy himself that the test he gives fulfils the conditions of any good examination, *viz.*, validity, reliability, adequacy and objectivity. Standardised tests are the work of subject matter and test specialists, are intended for wide use and are accompanied by norms; whereas

the informal objective tests are usually constructed by the teacher or within the local institution and are intended for local use. As a matter of fact, in progressive educational practice, the standardised test and the teacher-made test should supplement each other. We think a great service to Indian education can be rendered if the Indian Ministry of Education set up a machinery of their own, as well as encourage and assist universities and teachers' training colleges in India, to undertake the work of making regional standardised tests needed for use in the colleges and universities in the different provinces. They should also encourage the universities to provide facilities for their teachers to get acquainted with the concepts and techniques of objective testing and to construct their own tests under competent technical advice made available at each university. If the general body of teachers in a university can be made to take to the use of scientific and statistical techniques in educational measurement, the way will have been opened for an objective review of the curriculum, and to a conscious improvement of teaching practice. With fairly accurate and reliable instruments to measure progress, the teacher will be anxious to have definite goals towards which to work and his scores will be more generally usable in diminishing the excessive importance now assigned to the external examination award. We shall make definite recommendations later in this behalf.

7. *Hall-mark of Attainment.*—While objective measurements of ability and achievement, and of aptitudes and interests, will render significant service in improving the quality of teaching and attainment, there would still remain the demand of society for a hall-mark. A final examination award at the completion of the first degree course will, we feel, be deemed necessary. The extension of the techniques of objective testing may be considered even at this stage. As a matter of fact this is being done in some other countries. The Graduate Record Examination in the United States, inaugurated in 1936, as a joint experiment in testing achievement at degree and post-graduate levels by four universities and the Carnegie Foundation for the Advancement of Teaching is now used by many colleges and universities in all the forty-eight states of the United States and in the District of Columbia, and in Alaska, Canada, Hawaii, Japan, Mexico, Puerto Rico and Venezuela. But as the process of changing over to the new techniques of testing and appraisal involves a degree of technical skill and preparation, we would recommend their application at this stage only after sufficient experience has been gained at the admission stage. At this, the first public examination, after twelve years of schooling, we would do well to begin utilising objective tests as soon as possible. The

rapidly rising numbers will soon render any other method impossible.

8. *Advantages of Objective Tests.*—It has been definitely established by data based upon thousands of cases in different institutions that the success of students in the college or university can be more reliably predicted by objective tests than by any other type of admission examination. High school students who have been admitted to college on the psychological test combined with achievement tests in English, Mathematics, Social Sicence, and Natural Science have had the following records in the first year of college work. The results of these tests correlate well with achievement at college.

Place in Relative Performance on Tests	Percentage Making Satisfactory Grades in First Year of College
	%
Lowest quarter or division	40
Third quarter or division	70
Second quarter or division	80
Highest quarter or division	95

The objective test makes a wide range of questions possible. As the student has only to make a mark, write a number, a letter, or a few words, fifty to one hundred items can be answered in an hour's time. Such wide sampling is thus made possible that the result obtained is very nearly that which could be obtained if the performance in the subject could be measured completely.

By eliminating all personal whim and fancy, mood of the moment, or widely varying standards of expectancy among the examiners the objective tests are immune from errors due to the subjectivity of scoring. An objective test can be scored repeatedly by the same person without variation in the score or by a number of persons without any disagreement in the scores. The scoring can, indeed, be done by a machine which is not a respecter of persons. No errors or irrelevant factors can enter into the result. There is only one variable involved, namely, whether the answer is correct or incorrect.

More time and care has to be applied in preparing objective tests, but time in marking is negligible compared to the long, laborious process of reading and marking the written essay examinations. Thousands of students can be examined one day and the scores or marks completed the next, sparing students the strain of long waiting for results, and saving a good deal of time for useful instructional work.

The objective test not only saves time, it saves money and personnel as well. The administration of the examination is

simple and the vast array of persons now engaged for examinations can be dispensed with. No moderators or external examiners are required for constructing the examination.

The objective examination does not lend itself to cramming and hasty preparation. No preparation is possible for a psychological or intelligence test. Preparation is what a student is born with and the use of his mind up to the time of testing. Achievement tests are so comprehensive in character that there is no such thing as "spotting" questions or covering the subject in predictable cycles. Past tests may be freely made available to students. If they score well on one test, they will do well on any similar test, provided the students are well and normal. If they fail in one, they are likely to fail in all similar tests.

9. *Position in the United Kingdom.*—We can foresee the criticism that the use of objective tests at the university level is something peculiar to America, and that in other Western countries notably Great Britain, universities have not been convinced of their value. As far as Great Britain is concerned the reason is fairly obvious. No British university needs to use the bare marks in a matriculation examination as its criterion for admissions : and most candidates are admitted only after either winning a competitive scholarship or passing a college entrance examination which includes an interview. The problem of dealing with huge numbers, common to India and the United States, does not occur at the university level in Great Britain. There the real selection of those boys and girls who are likely later on to seek admission to universities is made at the age of eleven or twelve, when all children of that age are tested and only a small percentage are allowed to enter the "grammar schools" from which the university draws nearly all its entrants. This testing of children, eleven or twelve years old, does involve the problem of huge numbers, and here the use of objective tests is rapidly supplanting other methods. Most of the larger "Local Authorities" now use for this purpose standardised objective tests in English, Arithmetic, and General Intelligence. Both countries, therefore, make use of the objective tests at the point in their educational system where the problem of selection from large numbers is most acute. In the United States that point is at the end of the secondary school course, in Great Britain at the end of the primary school course.

III.—Essay Type of Examination.

10. *Place of Essay-Type of Examination.*—In view of its many advantages we feel that an important and far-reaching improvement in Indian education can be initiated by the introduction of this

modern technique of educational measurement and evaluation. We have, therefore, recommended a thorough study of the whole movement and the adaptation of its results to Indian requirements. But we do not wish to create the impression that objective testing should necessarily rule out the essay-type of examination altogether. We are alive to its defects, but it has some advantages too. It is, besides, the only method in vogue at present and thoroughly well known to all in the field of education. The introduction of the new method of objective testing, measurement and appraisal will take some time. Even when introduced, it will, we feel, have to be supplemented by the essay-type of examination. It is, therefore, essential to see that the obvious defects of this type are minimised as far as possible.

The essay-type of examination which prevails at the degree stage, as elsewhere, suffers from some major defects. It has usually no clearly defined purpose ; it is, therefore, invalid. Its sampling is very arbitrary and limited ; it is inadequate. Its scoring is subjective and therefore not reliable. It is maintained, however, by advocates of this type of examination that essay tests are easy to prepare and administer, that it is possible to use them for practically all subjects of the curriculum and that they have values not possessed by the objective test in as much as they call for comparison, for interpretation of facts, for criticism, and for other forms of higher mental activity. A conclusive verdict on the comparative advantages and disadvantages of this type is difficult to give but it seems clear that the inherent limitations of this type of examination have to be carefully borne in mind. By itself this type of examination may not be expected to fulfil the basic conditions of a good test, but in conjunction with more objective techniques it may be utilised to great advantage. Moreover, until such time as objective examinations at all educational levels are evolved, this type will hold the field. It should, therefore, be the concern of all educational organizations to improve this type also. This improvement, we suggest, can be brought about in the selection of test content, in the framing of questions, and in the scoring of results. The exact purpose of the examination must be understood by both the examiner and the students. The emphasis in this type of examination should be expressly on thought, acute reasoning, critical exposition, creative interpretation and other types of mental activity in relation to the materials of the course. Its main concern should be with topics involving relations and problems. The setter or moderator of an essay-type examination paper may, it has been rightly suggested, well ask about each question in it :

1. Is the question concerned with important phases of the subject ?

2. If the question emphasizes minor details, are they useful in linking up other facts, ideas, theories, involved in the subject ?

3. Does the question give emphasis to evaluation or to relational thinking ?

4. Is the question stated in such a way as to stimulate thought or challenge interest of pupils ?

5. Does the question force the pupil to integrate his ideas around certain interest centres ?

6. Is the question stated in such a form as to force the pupil to sample widely into his background of fact ?

7. Does the question call for any originality of thought organization and expression ?

8. Does the question call for the pupil to integrate facts gained from different sources ?

9. Is the question limited sufficiently that the pupil has some reasonable chance of writing what he really knows about it in a reasonable time ?

Definite steps should also be taken to minimise the other outstanding defect of the essay-type examination, *viz.* the subjectivity and the consequent inaccuracy of marking. Studies like those conducted by F. L. Kelly, J. M. Stalnaker, V. M. Sims and others lead to the conclusion that this traditional essay-type of examination can be fairly reliably scored if precautions are taken and the marking is done under closely controlled conditions. These must be carefully studied by our Examination Boards and necessary steps taken to remedy the evil.[1]

IV.—Recommendations.

11. *Recommendations Regarding Objective Examinations.* 1. We recommend that a thorough study of the scientific methods of educational testing and appraisal be undertaken by the Ministry of Education, and at the universities with a view to applying the results of this study in Indian educational practice.

2. The Ministry of Education should have one or two experts who are skilled in the preparation and use of objective tests and who understand the underlying procedures and principles, preferably persons who have a Doctor's degree in this field. This would provide an agency for centrally organized research of testing procedures

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[1] Greene (H.A), Jorgensen (A.N.) & Gerberish (J.R.) : *Measurement & Evaluation in the Secondary School,* p. 168.

Kelly, Fred J., ' Teachers' Marks ", *Contributions to Education,* No. 66, Teachers College, Columbia University, New York, 1914.

Stalnaker, John M., " Essay Examinations Reliably Read ", in *School and Society,* November 20, 1937.

Sims, Verner Martin, " The Objectivity, Reliability and Validity of an Essay Examination Graded by Rating ", in *Journal of Educational Research,* October, 1937.

and a place where local results in universities might be pooled, and from which advice and assistance could be sought by the universities.

3. Each university should have a permanent full time Board of Examiners with a small staff of assistants who can do clerical and routine work. All the members of the Board, which need not exceed three in number, should have at least five years' teaching experience and at least one should be a highly expert person in the field of testing and statistics.

The two chief functions of the Board of Examiners would be :

(*a*) Advising the university or college instructional staff concerning techniques in devising and constructing objective tests for their class examinations and providing criteria and material for the periodic revision of the curriculum.

(*b*) Making periodic and thorough inspections by use of progress tests in affiliated colleges, which should be required to maintain certain academic standards in addition to the quantitative criteria now required for affiliation.

The teaching staff in the different areas of subject-matter, who are thoroughly familiar with the materials in the lectures and courses would, of course, be responsible for assembling the items to be covered by the tests. They would have the technical advice of the Board of Examiners in constructing the tests and in interpreting possible results and deviations. The Board would reproduce them in the quantities desired, set and give the examinations, score them and announce results.

Where would the experts for the testing service be found ? There would be at least three sources :

(*a*) Some qualified persons are available at the present. The Commission encountered some in the course of its visits to the universities. More may be available and their services should be utilised in this connection.

(*b*) A group, which would be sufficient to direct Examination Boards at all universities, could be developed by intensive preparation and seminars over a period of six months. For this purpose, we might enlist the services of competent experts in the field from other countries.

(*c*) The Government of India could also provide scholarships for Indians in American universities and train the requisite number of experts.

3. We would recommend that a battery of psychological and achievement tests be developed for use with higher secondary school students for the final test at the end of twelve years of schooling. This will, together with other relevant information, serve the purpose of an admission examination to the first degree course at the university. The American Council on Education Cooperative Psychological and General Achievement Tests would serve as a model from which to build a satisfactory basis of selection of Indian students. That service is adapted for the twelfth grade. This Commission is now recommending twelve grades as preparatory to college or university work in India.

4. We recommend that a set of objective progress tests for guidance and for evaluating class-room progress should also be developed immediately.

The tests would have to be developed *de novo* for our use. They would need to be set up in the language which is used as the medium of instruction and Indian norms developed. Norms are established by using the proposed tests on a considerable segment of a typical population of students and discovering the performance of a thousand or more students.

These will be scattered over a surface of normal frequency. The average or mean performance will become a standard of comparison for calibrating the tests. This is the same method that insurance companies use in figuring their tables of mortality. The norms for each test in the American Council battery were based upon the records of approximately 6,000 students in twenty-five colleges. We do not think that it is wise to attempt to establish national norms in India with the diverse conditions of language and other factors, except as a very long range project. However, all Indian universities have sufficient student population to set up quickly local or provincial norms. This has proved to be the best policy in the United States.

No great risk would be encountered in setting up an immediate project in objective tests in this country. The tests in the United States which would supply models represent over thirty years of work and scientific experimentation, the expenditure of millions of dollars and wide application in many fields. Objective tests are being successfully employed in job analysis and personnel selection in many large business enterprises and were used by the United States Army and Navy in assigning personnel in two World Wars; and are now in use in selecting material for officer training as well as admission to the Military Academy and the Naval Academy. There are many educational tests, beside the ones described here

being extensively used. The College Entrance Examination Board of the United States which is a national agency of high repute administering entrance or matriculation examination, now offers testing opportunities for admission to American colleges and universities in 500 centres in different parts of the world.

India may derive all the benefits of the costly American experience at little expense and without great difficulty.

For purposes of admission to college and university, the tests should be accompanied with much additional information and interviews with students when conditions make this possible. It is desirable to get an educational profile of each student by assembling all information pertinent to his record and possibility of success in college. The Secondary School Cumulative Record Form in the U.S.A. provides for the recording of the following items: name; religion; sex; date of birth; mental age; chronological age; intelligence quotients; school grades achieved; school grades attended; achievement test and school marks; height and weight; photograph; schools attended; record of attendances and absences; causes of absence; discipline; unusual accomplishments; mental emotional, and physical experiences; extra-curricular experiences, athletic and non-athletic; clubs and offices; vocational experiences; educational plans; educational recommendations; vocational and professional preferences; interests reports; special defects; health; mental hygiene; social adjustments and home conditions; personality ratings; and measurements. Information on these items is recorded for each calendar year in such a way that the progress of the pupil can be traced easily across the record form.[1]

12. *Recommendations for the Correction of Evils now Existing in the Examination System.*—Pending the development of objective tests, there are definite steps which could be taken to relieve much that is defective and vicious in the present examination system.

We offer these recommendations, some of which have been repeatedly suggested by former Commissions and Committees, and most of which were strenuously urged by witnesses appearing before this Commission.

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[1] *Vide Examinations and their Substitutes in the United States*, by I.L. Kandel, Professor of Education, Columbia University, p. 143, published by the Carnegie Foundation for the Advancement of Teaching, New York, 1936.

1. A university degree should not be required for government administrative services. Special state examinations for recruitment to the various services should be organised and should be open to whosoever cares to take them. That this may not unduly add to the work of the Service Commissions, a small deposit may be prescribed for the privilege of taking the examination, and candidates satisfying a certain minimum standard of achievement may be entitled to a refund. This would remove one of the chief evils of the educational system.

2. No credit is, at present, given for classwork in courses except sometimes in the case of practical work. It was strongly urged by a host of witnesses including teachers, students and outsiders that such credit should be given. We feel that it will be conducive to efficiency both in teaching and learning. It will make it possible to spread the work uniformly during the academic year and the very common practice of working at high pressure in the last few months immediately preceding the examination, which is notoriously responsible for undermining student health and causing severe nervous strain, will be effectively discouraged.

We recommend, therefore, that one third of the marks allotted to each subject be reserved for work done during the course of instruction and that this be adopted forthwith in the teaching universities for the B.A. and B.Sc., M.A. and M.Sc. examinations. The affiliating universities should also take immediate steps to evolve a method of more or less uniform marking for this internal award at the affiliated colleges. An effective machinery for the supervision and inspection of affiliated colleges to insure uniformity of standards should be devised. In post-graduate courses, term papers could be required as a part of this course credit. The progress tests which we have recommended above will be of great use in this connection.

3. Three years will be involved for the first degree. It is not desirable that all that work should be subjected to one examination at the end of the period. That would entail unnecessary mental strain. Sections of the course which are more or less self-contained can be made the subject of periodical examinations spread over the three years' duration. A scheme of such self-contained units of work should be prepared by each university and the student should be required to pass in all the units before getting the degree. Examination should as far as possible be given in compartments, subject-wise and time-wise. A beginning in this connection can be made with general education courses suggested in the chapter on Courses of Study.

4. Examiners should be selected with great care. No one should serve as an examiner in a subject which he has not taught for at least five years.

Three years should be the limit of continuous service as an external examiner for the first degree examination. After a break of three years, service may be permitted again.

5. Every examining authority should have a careful study made of the work done in other countries to discover methods of minimising the outstanding defect of the essay-type examination, the subjectivity of marking ; and should take all necessary precautions to see that marking is done under closely controlled conditions.

6. The standards for success at the examination should, as far as possible, be uniform in the various universities and should be raised. We suggest that a candidate should get 70% or more marks to secure a first class, 55 to 69% for a second and at least 40% for a third. The students will be arranged in alphabetical order in each of the three classes.

7. In view of the other recommendations made by us, especially the one requiring due regard being paid to work during the course, we recommend that the system of awarding grace-marks be abolished for the first degee and all higher examinations.

8. *Vive-Voce* examinations should be employed only for post-graduate and professional degrees. They should be designed, however, to test the candidates competence in the fundamentals of the field of study to which the problem of his research belongs.

CHAPTER XI

STUDENTS, THEIR ACTIVITIES AND WELFARE.

I.—Introduction.

1. Functions of a University. 2. Teaching Youth Most Important Task of University. 3. This Chapter Devoted to Welfare of Students.

II.—Selection of Students.

4. Principles of Selection of Students. 5. Opportunity Should be Based on Ability, Character and Industry. 6. Communalism and Favouritism to be Banned. 7. Scholarships Will Equalize Opportunity.

III.—Scholarship Examinations.

8. Scholarships for Meritorious Students.

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9. (*a*) Medical Care. 10. Medical Examination. 11. Each University Must have a Hospital. 12. Mofussil Colleges Could Bring Doctors from City for Physical Examinations. 13. Treatment of Students with Infectious Diseases. 14. Vaccinations and Inoculations Required. 15. Staff Members Should be Examined. 16. Medical History and Records of Students Should be Kept. 17. Treatment of Physical and Mental Defects. 18. Sanitation. 19. (*b*) Nutrition or Proper Food. 20. Dietary Deficiencies Must be Corrected. 21. Rigid Inspections Required of Lodgings, Dining Rooms and Kitchens. 22. Meals at Reasonable Cost Suggested for Certain Students. 23. Free Canteens at Mysore. 24. (*c*) Recreation and Physical Education. 25. Deficiencies of Physical Education. 26. Suggestions for the Improvement of Physical Education and Games. 27. Degree Courses in Physical Education. 28. Dearth of Teachers of Physical Education. 29. Each University Should Appoint a Properly Qualified Director of Physical Education Who Should Have the Status and Pay of Other Heads of Departments. 30. Plans for a Central Institute of Physical Education. 31. Director of Physical Education Should have Postgraduate Degrees and Advanced Research. 32. There Must be Provision for Adequate Gymnasia, Playgrounds, and Physical Facilities. 33. There Must be Enlarged Staff. 34. Two Years of Physical Education Should be Required of All University Students Except the Physically Unfit and Those in the Cadet Corps. 35. A Suggested Organization of a Department of Physical Education. 36. (*d*) Personal Habits.

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VI.—Social Service.

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VIII.—University Unions.

IX.—Discipline.

X.—Student Welfare.

I.—Introduction.

1. *Functions of a University.*—Education of the youth and the discovery of new truth are the principal functions of universities. The boys and girls of today are the matured citizens of tomorrow. An educated citizenry, according to Edmund Burke, are a greater defence to a democratic country than a vast standing army. The revelation of new knowledge by research not only enriches human life in the intellectual realm but is the chief arm of technical and economic development of a nation. Of the end-products of the university, the education of the individual should take priority. As knowledge increases, the mere task of transmitting the accumulations of the past to the on-coming generations becomes more diffi-

cult and important in spite of libraries, archives and museums. Ignorance is an enemy more formidable than Antæus, the giant wrestler of old, who came up after each fall strengthened by mother Earth. Hercules could destroy him by strangulation in the air but ignorance is an implacable enemy to human freedom and happiness which is not so easily destroyed. It is an antagonist to all man's progress which perpetually returns as fast as it is conquered.

2. *Teaching Youth Most Important Task of University.*—Universities are conglomerations of human and physical elements but the student is the most precious of these. Buildings and equipment are necessary, a competent staff more vital still, but these are means, the student properly equipped to live and take his place in a democratic society is the consummation most devoutly to be wished for. The emancipation of young minds, the awakening of the consciousness of personal dignity, and the consecration of fresh recruits to the cause of human progress and service,—here is the greatest task of the university. There is no more solemn duty on earth than the training and development of the human soul.

The student is not created for the university but the university exists for the student and, therefore, it must spare no effort and omit no devices which may promote the fullest and most complete realization of the students' possibilities on all planes, physical, intellectual and spiritual. Education in a university should be for a student a source of interest and enjoyment, whatever be his speciality ; every student should develop an intellectual habit, an attitude of mind, a temper of social behaviour.

3. *This Chapter Devoted to Welfare of Students.*—In other chapters of this report we dealt with techniques and elements which are designed to promote scholarship and intellectual achievement. Elsewhere, we treat of the necessity of religious instruction. Here we shall stress those matters which relate particularly to the physical welfare of our young men and women in the colleges and the universities, the preservation and development of strong bodies, the formation and cultivation of correct habits, the exercise of wholesome corporate life, debating, recreation of both the mental and the physical being, and the maintenance of good conduct and the methods of self-discipline. The following suggestions may be considered for promoting health, physical education, military training, desirable living, corporate life, social service, good habits, discipline and the best welfare of students in all aspects.

II.—Selection of Students.

We have already made allusion to the numbers of students who are going to universities who do not have the ability to profit

by such an opportunity, and we have pointed out the heavy mortality and great wastage which result. A word of caution is in place here. It should not be inferred that too large a part of those of college age are going to colleges and universities in our country—quite the contrary. The percentage of the population receiving higher education here is lower considerably than in most countries in the West. For example, in 1946-47, there were 20,78,095 resident students in the colleges and universities of the United States out of a population of less than 15,00,00,000 while here there were 2,41,794 enrolled in our universities, including constituent and affiliating colleges, out of a population of 32,00,00,000 people. That is, in the U.S.A., there are more than eight times as many students enrolled in higher education than here, out of a population probably less than half of ours. Even this comparison is deceptive in that more than half the Indian university students are in the intermediate courses, which should be given in the high schools. The situation calls both for more educational opportunity and for better selection of students. There are many students in our universities who cannot or will not profit by the experience, but many more outside who should and would profit by the opportunity.

4. *Principles of Selection of Students.*—We are recommending elsewhere the use of Achievement Tests. The examination record cannot be regarded as a completely satisfactory criterion of a student's ability. We, therefore, recommend the adoption of these tests in an increasing measure. These tests have a guidance value which will enable us to make a better selection of students who apply for admission, and will help us to place them in the fields for which they have aptitudes. Further, general education courses in the high schools and at the admission stage of the university will have a diagnostic value as students can explore their abilities over the chief areas of knowledge before taking up a special subject for a degree. More of the unfit will be eliminated and the students will be better adjusted to their courses, thus reducing wastage.

5. *Opportunity should be based on Ability, Character and Industry.*—In broad outline, the policy of selection should be based upon the desirability of giving to each boy and girl who has the intellectual and physical powers, the character and habits and the industry to improve these, every possible opportunity to realize his or her other ambitions. Not only do individual success and happiness require this, but social welfare cannot otherwise be safeguarded in a democratic society.

6. *Communalism and Favouritism to be banned.*—Elsewhere we have discussed the unfortunate effects of communalism, the system of quotas, and discriminatory practices in the admission of students

to universities and colleges. It cannot be made too emphatic that we think all universities should be free and their advantages equally available to the deserving, and the disintegrating tendencies of communalism and all forms of favouritism banished. Any other course is a denial, at least in part, of the conception of a university. The Declaration of Human Rights adopted by the United Nations last December has a clause " There shall be equal access to higher education on the basis of merit. "

7. *Scholarships will Equalize Opportunity.*—We have recommended a large number of scholarships which will make it possible for boys and girls, whose resources are so slender that they cannot afford the rather large expense of higher education, to enjoy the privilege without discrimination. A large number of those best qualified to benefit by education, who are not in the universities, or who have entered and have been compelled to drop out, are those who have been frustrated by financial difficulties.

In the first degree stage, every university should do its utmost to offer as wide a variety of courses as possible. The cost of living has become such that many students cannot afford education except at institutions located in the vicinity of their homes, and each university should endeavour to serve as many of these young people as its resources will permit. Students, well qualified to go elsewhere, should not be denied education because of accident of birth or location.

On the post-graduate, professional, and advanced research levels, where the expense becomes highest and the students are relatively few, there is need for specialization and correlation as between different institutions. At these levels there must be division of service among the universities and colleges and duplication of courses should be avoided.

III.—Scholarship Examinations.

8. *Scholarships for Meritorious Students.*—It has been represented to us that there are a number of brilliant but extremely poor students who cannot proceed to intermediate colleges and universities for want of adequate funds. Even when some of them manage to come up to the university, they have to take up private tuitions or other work to pay for their living and tuition fees at the university. This position is unfortunate and should not be allowed to continue. No really brilliant student should be prevented, on grounds of poverty alone, from pursuing his academic career, and it should be the duty of the State to provide for his education and maintenance, both at the intermediate college and at the university. It should be the task of the universities to discover and give opportunity to the gifted

members of the community. For this purpose we recommend the institution of scholarship examinations at which the poor but bright students should compete for scholarships. A kind of " scholarship ladder " should be provided to enable talented students to climb their way from the school to the end of their university career. These scholarship examinations should aim at selecting candidates mainly with a view to promise of future development and achievement, greater importance being attached to evidence of ability than to bulk of acquired material. These scholarships should not be of the value of Rs. 16 or Rs. 20 as at present, but should cover the student 's fees as well as his cost of living at the university ; their value should be about Rs. 60 at an intermediate college and Rs. 80 at the university. Merit alone should be the criterion for the award of these scholarships. A ' Means Test ' should be applied only after the results of the examination are published. It is possible that some students who can well afford their education will also appear at these examinations ; they should not be discouraged ; but if they win these scholarships, they should be given a simple token award in recognition of their merit.

Admissions to the benefits of universities of people who have been hitherto excluded by their social position or income must no longer be denied. The social cleavages between the rich and the poor should not be emphasized by this procedure if awards are based upon merit. To subsidize poverty is to penalize it. These scholarships are not intended to compensate poverty but to help real ability.

IV.—Health.

Health, both physical and mental, is basic and essential to all individual and social welfare. The oft-quoted precept of the Roman writer Juvenal, "*Mens sana in corpore sano*"—" a sound mind in a sound body " may be thread-bare, but it is as true today as it was two milleniums ago. In a sense it is true that the mental vigour and spirit of a people are conditioned by its state of physical health.

Good health is dependent on a multitude of factors, but the most important are :—

(*a*) Medical care, both preventive and remedial.

(*b*) Sufficient food of the right kinds.

(*c*) Recreation.

(*d*) Personal habits.

All of these are especially significant for young people who are still growing and who are forming their life habits. The health programme of a college or a university must emphasize these factors.

9. (*a*) *Medical Care.*—The problem of medical care on a campus derives in large degree from the status of the nation. This status may be best explained by an excerpt from the *Report of the Health Survey and Development Committee* concerning the incidence of diseases. This report says : " At least 100 million persons suffer from malaria every year, and the annual mortality for which the disease is responsible, either directly or indirectly, is about 2 millions. About 2·5 million active cases of tuberculosis exist in the country and 500,000 deaths take place each year from this cause alone. The common infectious diseases, namely cholera, smallpox and plague, are also responsible for a large amount of morbidity and mortality, the extent of which varies from year to year. Among the different countries of the world for which statistics are available, India ranks high as one of the largest reservoirs of infection in respect of all the three. These and the other two are all preventible diseases and their incidence should have been brought under effective control long ago. In addition, endemic diseases, such as leprosy, filariasis, guinea-worm, and hook-worm diseases, are responsible for a considerable amount of morbidity in the country, although their contribution to mortality is relatively small. "[1]

The university and the college draw their student bodies from a cross-section of the population and, in the light of the above facts, it is little short of criminal to permit young people to mingle in the close contacts of college life without taking the steps which are necessary to promote health and check the spread of contagious diseases.

10. *Medical Examination.*—Most universities and colleges visited by the Commission claimed to have some kind of physical check-up with preventive and corrective measures but it is fair to say that these programmes, with a few exceptions, exist largely on paper and the authorities frankly admit that the administration of them is a fiction.

All students, both men and women, should be given a complete free physical examination at matriculation time, and periodically afterwards at least once a year.

In residential universities which have Medical Colleges, the health programme for students, including the administration of physical examinations, would not be difficult. A full-time doctor with administrative as well as technical ability should be designated as the University Physician and part of the resources of the hospital made available for student care and service. This would require a

[1] Vol. IV, pp. 2, 3.

dispensary open at regular hours each day for students, wards for students requiring hospitalization, services of technicians, nurses and drugs. The demand would, of course, become heavy in times of epidemics.

The University Physician would be responsible for the administration of the physical examination. It might be necessary to secure the assistance of outside doctors or technicians at the time of the physical examinations.

11. *Each University must have a Hospital.*—In any university which does not have a Medical College, it is necessary to set up a hospital or infirmary with a competent staff of doctors, technicians, and nurses under a Head Physician. An affiliating college would not always have the resources for supporting a complete student health service. Colleges located in district towns, could avail themselves of the District Health Centre, which would co-operate in giving physical examinations and some other assistance in student medical care.

12. *Mofussil Colleges could bring Doctors from City for Physical Examinations.*—A university or a college outside the cities or district towns would find it necessary to employ a medical staff which would require to be enlarged by bringing out a team of doctors from the city during the period of matriculation and physical examination, which would last a week or ten days.

The Honourable Minister of Health of the Government of India, Rajkumari Amrit Kaur, expressed to us the opinion that physical examinations should be required of all students, and preventive inoculations should be administered. She testified further that at least one whole-time doctor for each institution is indispensable.

A statement of his medical history should be required of each student previous to the physical examination, and clearance by the physical examination should be a requirement for matriculation.

13. *Treatment of Students with Infectious Diseases.*—Students suffering from infectious, chronic or endemic diseases should be denied matriculation, unless the university has available facilities for isolating and treating those who may have curable diseases.

14. *Vaccinations and Inoculations required.*—We recommend that all students be required to be vaccinated against smallpox and inoculated against cholera, typhoid and plague. These can be handled rapidly in large numbers by a single technician or properly trained nurse, approximately two hundred per hour.

We reiterate that the omission of these recommendations is nothing short of inhumanity to the afflicted students, and a social menace to the other students. We recognize that there is a great shortage of doctors in India, but most of the work may be done by nurses and technicians under the supervision of one doctor.

15. *Staff Members should be examined.*—All staff members and employees of universities and colleges, especially those handling food, should be examined when first engaged and the latter periodically thereafter at least once a year.

Students should be instructed to report illness to the infirmary or to the university physician. In co-educational institutions there should be a woman doctor who can care for girls. In small co-educational colleges which are unable to provide a woman doctor, the Director of Women's Physical Education can make physical examinations and check on the health of the women students.

16. *Medical History and Records of students should be kept.*—The medical history and record of all students should be kept on cards and filed in the hospital and also in the registrar's or the principal's office as the case may be. One of the duties of the health department should be to furnish excuses of absence because of illness or physical disability. This applies to regular class attendance and to physical education and military drill. Physically unfit students should not be required to take physical education and drill. An important but often neglected service of a university health department is keeping parents or guardians informed when students are seriously ill. No major operations should be undertaken without the approval of parents and guardians, except in grave emergencies

17. *Treatment of Physical and Mental Defects.*—If students, when examined are found to have serious defects, either of a physical or mental nature, they should be refused matriculation, or records should be made and corrective measures undertaken. Defects of eyes, ears, speech, adenoids, tonsils, etc., mental disturbances, should be noted and therapeutics applied when possible. Emotional instability can wreck a student's scholastic success as effectively as physical illness. Mental hygiene should take an important place in student care.

18. *Sanitation.*—Sanitation has a significant place in preventive medicine. The health service should include inspection of the campus, buildings, hostels, water supply and off-campus residences. Breeding places of mosquitoes and other disease-carrying insects and parasites should be treated. Empty cans and other debris should be removed and grounds kept clean. Hawkers and food vendors should be licensed and their goods inspected.

Many colleges, we found, do not offer convenient and sanitary rest rooms. In some places the water supply is not purified. Inspection and sanitary measures should be rigorously enforced on all campuses, and the health department should make regular reports on conditions.

19. (*b*) *Nutrition or Proper Food.*—The Honourable Minister of Health of the Government of India told the Commission that malnutrition in some form or another extended to approximately 80 percent of the population.

The Indian Research Fund Association has set up a Nutrition Advisory Committee under the chairmanship of the Public Health Commissioner of the Central Government. The Secretary of the Committee is the Director of the Nutrition Research Laboratories at Coonoor.

This Committee holds strongly to the view that health is not only concerned with disease and its prevention but is likewise dependent upon a strong and vigorous population which can only be developed through improved nutrition.

The Committee's Report says :

" The modern public health movement is not concerned solely with the prevention of disease. It has the broader aim of creating an environment in which each individual can develop his potentialities fully and completely. This is particularly true as regards nutrition. Malnutrition produces states of ill-health and lowered physical efficiency, short of actual disease, which are perhaps more important, because more widespread than disease itself. Numerous investigations among school children in India have shown that a large percentage of children are in a poor state of nutrition, with consequent impairment of physical and mental growth. Again, in the adult population the ill-effects of malnutrition are widely evident in the shape of a low level of general health and reduced capacity for work. On the other side, the striking improvement in the condition of army recruits, which takes place after a few months of abundant and satisfactory feeding, is highly significant.

" The positive aspects of the campaign for improved nutrition, must be strongly emphasized. Freedom from disease is one thing; abundant health is another. The goal to be aimed at is the creation of a healthy and vigorous population. "[1]

The student population at the university level probably represents a better fed group on the average than the population out-

[1] Quoted in the *Report of the Health Survey and Development Committee,* Vol. II. p. 69.

side but the same characteristics apply, though to a somewhat less extent.

20. *Dietary Deficiencies must be corrected.*—Elsewhere in this Chapter we discuss food facilities for students and advocate the placing of trained dieticians in dining halls and feeding establishments. We reiterate this here with the observation that many students are suffering from undernourishment and malnutrition which must be corrected if mental and physical efficiency is to be elevated. Studies show conclusively that the principal dietary deficiencies are proteins, mineral salts and vitamins. The rapid response of army recruits to abundant food of the right kind, already cited, proves beyond a doubt that college students are susceptible to quick improvements. It is easily possible to build up the bodies of resident students. In the case of students living in off-campus lodgings, unless proper food is provided, such places should be dropped from the approved list. This calls for regular periodic inspection. In this connection, all persons handling food, both in hostels and off-campus dining halls, should be subjected to physical examinations, and no one with infectious disease should be employed or permitted to continue if they become infected. We visited kitchens which were insanitary and unfit for the preparation of wholesome food. Likewise there is a lack of convenient lavatories in some places where the food-handlers can keep themselves clean.

21. *Rigid Inspections required of Lodgings, Dining Rooms and Kitchens.*—Lodgings, dining rooms and kitchens are seldom sanitary unless there are regular and rigid inspections. Vice-Chancellors and principals should require weekly reports on matters of this kind and take prompt remedial action when occasion demands.

22. *Meals at reasonable cost suggested for certain students.*—Even the above measures cannot improve the health and living conditions of all students. Many students suffer from poverty, sometimes in an extreme form. They do not receive adequate food at home or they are struggling for an education on insufficient means of their own. We would suggest that in colleges where a considerable proportion of the students are poor or are living on slender resources, the noon meal could be furnished to students who are non-resident. This meal would be of a character suited to the dietary needs and served at a very reasonable charge. Such a programme would have to be subsidized. These meals could be served under a coupon system and coupons issued free to needy and worthy students as a scholarship. Neither the Centre nor the Provincial Governments could make a better use of grants for any other purpose.

23. *Free Canteens at Mysore.*— Such a plan is already in operation at the University of Mysore. Free Canteens have been set up in most of the colleges of the University for the benefit of students whose lack of means requires them to go for long hours of working time without food and nourishment. The Government of Mysore makes a grant of Rs. 10,000 in the annual budget for these Canteens. Canteen Committees are set up in the various colleges for administration of these projects in the best interest of needy students. It is reported that the plan has been working satisfactorily and even better results are expected when the supply of food is increased in this country. These Canteens are free but we would suggest that the plan adopted in other universities and colleges, and a reasonable charge of a few annas be made, so as not to pauperise the students.

24. (c) *Recreation and Physical Education.*—Physical Education and games are dealt with here under one caption because they are closely related although some colleges and universities in India have organized them separately. The concept of physical education as exercise for muscular development through floor work, calisthenics, swinging clubs, lifting weights, associated only with such sports as boxing and wrestling, should be allied with a broader programme of play and games. This is a trend all over the world. The purely gymnastic physical education once attracted considerable interest as a form of exhibition of strength and daring feats, but it was never as well adapted to wholesome benefit and interest of the masses of students as properly directed games and outdoor recreation. In fact, the Commission saw more than one exhibition of the old type as it toured the universities, but found *intra-mural* games to be a neglected area of education. The reasons for this are many and its importance would seem to justify some analysis and evidence. The Chief Inspector of Physical Education, Government of Madras, wrote to the Commission :

"Whether programmes of health, physical education and recreation (games and sports) should be sponsored by the universities for the students in the universities and colleges, and how these programmes should be introduced and developed are questions which have recently engaged the attention of university authorities, the Inter-University Board and the Governments, both at the Centre and in the Province. If no definite action has been taken, it is partly due to the many academic problems universities are facing, and partly to over-emphasis on intellectual education and examinations, but mainly due to the fact that a recognition of the place of physical education, games and sports in the scheme of university education is not yet comprehended and taken for granted."

An ex-Principal of a Government College testified :

" Give students ample opportunities for activities under sympathetic guidance. 'Frustration' should be met by opportunities for 'expression' in several directions. There is hardly any attention paid to fine arts, drama, music, games and sports. Facilities are quite inadequate and there is not enough diversity in those that are provided."

In reply to the Commission's Questionnaire, the Patna University said in part, regarding Physical Education :

" (*a*) The present arrangements are not satisfactory. The hostels have no grounds of their own and have no funds to provide for games or make arrangements for physical education. The college hostels are able to take advantage of the facilities provided by the college but the outlying hostels are denied this. Even if funds and fields were made available, the small number of students living in these hostels would make organized games impossible.

(*b*) The conditions for students not residing in hostels are much worse. Students have to be in the college from 10 A.M. to 4 P.M. and they do not take any lunch during the college hours. They return to their homes after college for a much needed meal, and get no time to come back again for games. No provision can be made for students scattered all over a big town."

In response to the question, " Are you in favour of compulsory physical education and games ?", the reply was " Yes, for all who are medically fit."

The Osmania University replying to the question, " Are you satisfied with the present arrangements for physical education and games in the universities ?" answered : " No. There are various deficiencies like the absence of good coaches, the poverty of the students (which makes it necessary for the university to supply them with sticks, bats and even boots) and the little attention bestowed on games especially, during the school stages. Physical instruction, wherever compuslory, seldom takes into account the fact that in some cases it may be harmful (and the same with games). On the other hand, if these are not compulsory, the general backwardness and lack of interest is sure to result in few taking part in such activities. The whole of these activities requires being co-ordinated

very closely with medical examination and the regulation even of diet. While there is difficulty always with regard to the non-resident students, even those who are resident in hostels do not take sufficient interest in games and sports. The university has itself to devote more attention to this side of the life of students, and to associate its teaching staff with the students on the fields."

With reference to compulsory physical education and games, the preference of Osmania was that either physical instruction or games should be compulsory " from the first to the fourth year ".

The above are typical expressions of opinion and testimony. One other may be cited here. The Report of the Co-ordinating Committee of Allahabad, Lucknow and Agra Universities on the topic of Physical Training stated :

" In the opinion of the Committee

(*a*) arrangements for physical training are inadequate ;

(*b*) such arrangements as exist are not efficiently worked ;

(*c*) no attention appears to have been paid to the question of nutrition and the provision of a balanced diet.

It is desirable that a Physical Culture Institute should be set up at one or other university centre, and better financial provision is needed for adequately organizing physical training."[1]

25. *Deficiencies of Physical Education.*—To summarize the deficiencies of Physical Education, in general, we may say there is lack of interest both on the part of the students and the authorities, insufficient trained personnel, dearth of play-grounds and equipment, poverty of students, absence of organization, poor types of programme, small variety of games, conflict with academic work, and inconvenience of time. These seem to be the most recurrent obstacles.

Some way must be found to overcome these deterring factors. It is hardly necessary to dwell here upon the importance of organized physical training and games. Man is one being and cannot be educated in artificial segments. His mental and moral nature is interlocked with his physical well-being.

26. *Suggestion for the Improvement of Physical Education and Games*—Very little improvement can be accomplished without more expert leadership in the realm of physical training and games. The prestige and importance of this work are not established here. The professional status and pay of Physical Education personnel should be recognized as on a par with academic instruction.

[1] Vide Chapter VIII of the Report of the Committee, p. 41.

27. *Degree Courses in Physical Education.*—We recommend that degree courses in Physical Education be set up in certain universities. There should be at least one such degree course in each Province. There are now half a dozen Professional Colleges or Institutes of Physical Education, chiefly in the large cities, but these are not on the university level and are not affiliated with the universities.

There was some opinion expressed against such courses in our testimony, but this seemed to be based largely on mistaken conceptions, such as that the question involves courses to be required of all students, or that there is insufficient scope for such training.

28. *Dearth of Teachers of Physical Education.*—The Health Survey and Development Committee points out the need of additional qualified teachers in physical education. They say : " Something has been done in India to give physical education and training their proper place in the educational structure, but a great deal remains to be accomplished. There is a great dearth of suitable teachers qualified to impart instruction in this important subject. We require many suitably equipped and staffed physical education schools and colleges in India...
For the proposed post-war schemes of education thousands of qualified physical training teachers will be required. We therefore recommend that there should be one or two physical training colleges in each province."[1]

29. *Each University should Appoint a Properly Qualified Director of Physical Education Who should have the Status and Pay of Other Heads of Departments.*—Anything else is only a make-shift which leads nowhere. For example, there are universities which attempt to use the Secretary of the Union as a Physical Director, which is quite inadequate. Sometimes we found affiliating colleges with Physical Directors, but none in the university. This is most unfortunate.

A good Physical Director on the university level should have a doctor's degree, either an M.D., or a Ph.D. It will require time to find and train the men. But we must start at scratch and men can be obtained while other needs are being provided. During the last 20 years about 3,000 physical education teachers have been trained at the Institutes now existing but few of them are capable of doing the kind of service required at the university level.

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1 Report of the Health Survey and Development Committee, Vol. IV, Summary p. 26.

30. *Plans for a Central Institute of Physical Education.*—In May 1948, the Government of India set up a Committee of twelve members on Physical Education representative of all India, with Dr. Tara Chand, Educational Adviser and Secretary, as Ex-Officio Chairman.

The Report of this Committee covers in an exhaustive fashion all the factors involved in a programme of Physical Education and the improvement of the standard of games and sports, including Olympic Sports. The terms of reference of the Committee include the location of a proposed Central Institute of Physical Education and the definition of its activities.

One Section of the Report deals with Physical Education in educational institutions. It recommends :—

(1) Training centres for Physical Education in the provinces of the country to increase the supply of trained teachers of physical education.

(2) Creation of organizing and Inspecting Staffs in each province, as has been done in Madras, Bombay, U. P. and West Bengal.

(3) The constitution of Boards or Councils of Physical Education in the provinces for the purpose of advising the governments in matters concerning Physical Education.

(4) The organization of Sports, Clubs, Gymnasia and Akhadas. These are cited and commended as agencies for the creation of interest in games, sports and exercises, with special reference to the many akhadas or indigenous gymnasia which foster and encourage Indian games and exercises.

(5) Financial support by the Governments.

(6) Programme of work.

The Committee make detailed recommendations concerning the Central Institute of Physical Education for men and women teachers, covering location, plant, staff, courses of studies, etc. The Committee feel "that in drawing up the courses, every endeavour should be made to utilise the indigenous material on Physical Education that may be available in the literature of the country, to the best advantage to secure its proper integration with the western system in such a way, as may ultimately be conducive to the evolution of a

national system of sports, games and exercises."

The Committee suggest a degree course of three years' duration after the Intermediate, the latter part of which should be bifurcated so that students may specialize either in Physical Education or Recreation. The course involves both theoretical subjects and practical activities. A post-graduate course of one year's duration is suggested, open only to those graduates, not to exceed 25 annually, "who shall have put in at least two years in Physical Education or Recreational Vocations," consisting of five subjects as follows :—

(1) Methods of Research.

(2) Tests and Measurements.

(3) Organization and Administration of Physical Education or Organization and Administration of Recreation.

(4) Detailed Study of Physical Education Movements in Different countries.

(5) One Elective in Activities.

The Committee recommend the following functions for the Central Institute :—

(*i*) to train teachers of Physical Education for Centrally Administered Areas.

(*ii*) to teach advanced courses leading to specialisation in various fields of Physical Education, e.g. Organisation, Administration and Recreation.

(*iii*) to provide facilities for research in Physical Education.

(*iv*) to train coaches for athletics, games and sports.

(*v*) to train leaders of play and recreation.

(*vi*) to publish literature pertaining to physical education and recreation."

31. *Directors of Physical Education should have Post-graduate Degrees and Advanced Research.*—We heartily endorse all the above recommendations of the Committee but think that at the universities the post-graduate work and research should go beyond the M.A. stage to the doctorate. A Director of Physical Education at the

university level should be equipped with the Ph. D. in Physical Education or should be a Doctor of Medicine with special training for the administration and direction of Physical Education and Recreation, Sports, and Games. The basic sciences in Medicine and Physical Education are largely the same, chemistry, bacteriology, anatomy, physiology, pathology, therapeutics, physical examinations, etc., followed by corrective measures which belong to both. The principal difference lies in the fact that the M.D. is more likely to guard the health while the Director of Physical Education, whose chief interest is organizing and putting on gymnastics, sports, and games, often overlooks the fact that Physical Education and games are a part of a programme of wholesome physical development. This is particularly true of highly expert coaches who develop teams for competitive contests at the university level. These contests cannot safely be put on without some knowledge of medical science. Boys and girls should not be permitted to enter such strenuous contests unless physically fit, should be removed when exhausted or injured, and therapeutics promptly applied when necessary. Girls should not be permitted to play at all at certain times ; swimming tanks must be examined for bacterial count. These and many other things are required if Physical Education and games are to promote and not at times injure health and physical welfare. In the United States, where athletic contests and competitive games have been carried to a high pitch both in the universities and in the Olympic games, the desire to win has become so emphatic that the best welfare of youth has not always been conserved.

We, therefore, strongly urge that Directors of Physical Education have the doctorate degree in Medicine or Physical Education, with the basic sciences of Medicine included and that the universities offering degree courses offer the doctorate as soon as facilities may be acquired. Special committees should be appointed to work out the courses for the advanced degree. If the Central Institute is located at one of the universities, it should offer the doctorate as a post-graduate degree. Furthermore, when students in physical education finish training they will look for employment, and persons who have a mere bachelor's degree will lack the scientific background and be too young to occupy a full professorship which is necessary if Physical Education is to be effectively developed in our universities.

32. *There must be Provision of Adequate Gymnasia, Playgrounds and Physical Facilities.*—Some universities, as for example, Banaras and Aligarh, have splendid facilities both in buildings and grounds for physical education and sports but at some other places, we found

pitiable conditions. For example, in Calcutta a college with a strength of over 5,000 students had a gymnasium in which not more than a dozen could exercise simultaneously, and no play-grounds.

Students desiring to play find it necessary to make a long journey to the Maidan. This kind of situation exists in many places and forms. Some of the colleges and universities seem to be making no effort to cope with these wretched conditions.

33. *There must be Enlarged Staff.*—If physical examinations are to be properly followed up with regular and corrective exercises, the Phycisal Instructor in the gymnasium, where most of this work is done, will need trained assistants. The remedial programme must be scientific or it is worthless or even harmful.

For the intra-mural sports and games, which have now become the most vital and useful means for physical education in institutions both in Great Britain and the United States, there should be more full-time leadership and guidance. Here the majority of the students should find their relaxation and physical culture.

The present system of using teaching staff from any academic department as leaders and assistants in handling the various sports and types of games should be continued and encouraged. It affords the best possible contact between staff and students and the most available medium for influence towards good institutional spirit and moulding fine character. A witness who has given a life-time to physical education made an admirable suggestion to us, namely, that some of the staff should be trained for a dual function, teaching an academic subject and physical education. This arrangement is economical both in services and money.

34. *Two Years of Physical Education should be Required of All University Students except the Physically Unfit and Those in the Cadet Corps.*—A witness of wide experience[1] answered our question regarding the present situation in physical education as follows :

" There does not seem to be any carefully thought of arrangement for physical education and games in the universities either for those resident in hostels or those not resident in hostels. Provision is made for some games in which those most interested take part. The University has no plan or programme according to which all have the opportunity for regular physical activities or games."

In reply to the question " Are you in favour of compulsory physical education and games ?" the same witness answered and made recommendations as follows :

[1] G. F. Andrews, M. A., Ph. D., Chief Inspector of Physical Education, Government of Madras.

"Yes, in our country it is only compulsion that works.—We want our young men and women to take an intelligent personal interest in their physical welfare. At present they have no knowledge of how to take care of their body; neither are they in the daily habit of exercising their body because this habit has not been ingrained in them by constant enforced practice in the earlier years. Consequently they have no interest in their physical development, health and welfare. All young men and women should leave the university physically well-equipped for their future, nothing but compulsion will give them this equipment."

A compulsory programme of physical education for all students, except for the physically unfit, is a large order which requires the provision of a varied range of activities. Gymnasium work, intramural games, swimming, hiking and of course major sports, such as football, cricket, hockey, etc., should all be available in accord with the capacity, choice and interest of students.

This would make heavy demands upon the Department of Physical Education and would bring all able bodied resident students into some desirable physical activity. It could not be applied in affiliating colleges at a distance from the university. They would have to look to the physical culture of their own students.

It would require that some place be given on the time-table for Physical Education. The entire day could not be consumed, as is the case now in some places, with academic work. It would also require organization of physical education activities.

35. *A Suggested Organization of a Department of Physical Education.*—

Director of Physical Education.

1.	2.	3.	4.
Courses in Physical Education.	Gymnastics, Boxing and Wrestling. Indian Exercises.	Inter-University and Team Games.	Intra-mural Games.

(1) The courses for teachers in Physical Education would be offered only in those universities selected to offer degree courses in the field. There should be at least one in each Province. The Head of the Department should be the Director of Physical Education or some one responsible to him.

(2) The gymnasium would be under an instructor who could give gymnastic exercises and usually handle boxing, wrestling and other in-door games. With the advice of the Student Health Department

and under the supervision of the Director of Physical Education, remedial exercises would be given to a comparatively small number of students whose physical examinations would be the guides.

If large numbers of students should be involved, it would require considerable staff and equipment for this activity.

(3) Inter-University and team games should be under the administration of the Director of Physical Education.

At present there is usually an Inter-University Board with subordinate local or zone boards which function for different sports. Some member of the teaching staff is assigned to the organizing, developing and accompanying the teams at the different games, football, cricket, tennis, hockey, sports, and the like. The present scheme of handling Inter-University and team contests should be continued but there is need of trained leadership and coordination in the use of equipment, playing fields and time-tables or scheduling. Therefore, the programme of Inter-University and Inter-Collegiate athletics and team games should be placed under the Director of Physical Education.

(4) Intra-mural athletics and games should be placed under the Director of Physical Education for the reasons already mentioned for Inter-University and team contests in order that all games, sports and physical culture may be properly coordinated and trained leadership supplied.

Reports made to us by witnesses and universities indicate that the games and sports which are organized by Athletic Associations reach only a few students. With compulsory physical education, most students will choose intra-mural activities. Only the few experts can aspire to Inter-University and team games, but any student who is physically fit may find a place in intra-murals.

A tremendous amount of interest can be injected into intramurals by stimulating competition between different units of students hostels, colleges, faculties and residential groups. If cups and other prizes are offered, interest may be increased. Under the Olympic rules, prizes must not be given to individuals. Trophies, cups and prizes can be put up by a donor or the Department of Physical Education or otherwise. Winners will hold them for one year and names and dates can be inscribed upon them. This type of physical education is the most important of all because it reaches the mass of students, produces pleasurable emotional reaction, and does not involve the strain and over-exertion incurred by playing on university teams.

36. (*d*) *Personal Habits.*—The preservation of good health is rooted deeply in habits. Knowledge of the right things does not necessarily involve proper practice. Contagious disease, improper

eating and lack of nutritious elements, uncleanliness both inside and outside the body, mental and physical strains, and other destroyers of vigorous health are all well understood and the remedies are known. The value of inoculations, vaccination and cleanliness ; the necessity and character of good foods ; the importance of fresh air, sleep, sunshine, mental and physical relaxation and hygiene—these are all generally recognized, but seldom fully practised. Health habits should be ingrained into school children and systematically inculcated at the college stage if our young men and women are to have the physical and mental health which is essential to individual and national power and happiness.

V.—National Cadet Corps.

37. *Value of Cadet Corps in an Educated but Imperfect Society.*—As a people, we desire peace and opportunity to build a free nation. We have been often invaded and compelled to fight for our self-preservation. We have not by tradition or instinct been aggressors. We do not ever expect to be, but we are guided by the inspired words of our great martyr to non-violence, Gandhiji : " My creed of non-violence is an extremely active force. It has no room for cowardice or room for weakness. There is hope for a violent man to be some day non-violent but not for a coward. I have therefore said more than once in these pages that, if we do not know how to defend ourselves, our women, and our places of worship by the force of suffering, i.e., non-violence, we must, if we are men, be at least able to defend all of them by fighting ."[1]

In the progress of societies, there are three stages. The first is where the law of the jungle prevails, where we have violence and selfishness. The second is where there are rule of law and impartial justice with courts, police and prisons. The third is the goal of civilised humanity, where love and law are one. This world is not the natural home of perfection. It seems to be the kingdom of chance and error. Caprices rule apparently without mercy in things, great and small. Through effort and difficulty ideals struggle to realization. While keeping the ideal before us and always striving towards it, we must recognise the relative justification of laws and institutions which use armies, police and prisons. In a world where all men are not saints, force has its place. It is necessary to check the turbulent, protect the helpless and keep order between man and man and group and group.

For good will to prevail requires opportunity for growth and expression. Those who by conviction are determined to live by non-violence should be respected in that attitude and provided with

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[1] *Young India*, September 16, 1927.

other means for development and discipline. The National Cadet Corps has been established by an Act of the Government of India (1948) and has found favour and support from a number of witnesses before the Commission.

38. *Statement of Minister of Defence.*—In a message to the Corps officer trainees who were in training with Army Units in the summer of 1948, the Hon'ble Minister of Defence said : " I need hardly remind you of the nation-wide interest in the National Cadet Corps. The scheme is of national importance not only because it will impart military training which is so necessary for us all but because it will also inculcate in our youth the spirit of discipline and comradeship, an essential pre-requisite of a free people. You are the pioneers in this great enterprise. You must know how great and noble your role is. It is through you when you return to your colleges and universities that our youth will be inspired and led ".

39. *The Aims of the Corps.*—The aims of the National Cadet Corps, as set out by the Corps Directorate, are :

"(*a*) The development of leadership, character, comradeship, and the ideal of service ;

(*b*) The stimulation of interest in the defence of the country to the widest possible extent."

40. *Success in the West.*—The Cadet Corps in Great Britain and the United States has been eminently successful in accomplishing the objects here expressed.

At the outbreak of World War II, there were 18,000 regular officers in the United States Army. There were 1,25,000 reserve officers, trained in the Cadet Corps of the colleges and the universities. Some universities trained more officers than West Point in addition to many hundred thousand non-commissioned officers and enlisted men. These reserves were of incalculable benefit in the war effort and the defence of the nation.

41. *Value in Peaceful Pursuits.*—Apart from any emergency that might arise, the Cadet Corps training is also very useful in preparing for peaceful pursuits. It inculcates discipline in an impressive way in that it teaches self-control and poise, the cooperative spirit, the ability to give and take orders, and above all, a sense of responsibility and formation of character. There are many by-products, among which are the ingraining of habits of bodily hygiene and standards of sanitation.

The All-Bengal College and University Teachers' Conference in 1945, in its Report on Post-War Educational Development in India, unanimously resolved " that military training extending over a period

of two years would go a long way towards the development of civic virtues. The existing University Training Corps may be utilized for the purpose".

Many other organizations, Committees and Commissions have advocated military training in the universities and schools.

42. *Organization of the Cadet Corps.*—The Cadet Corps is being recruited in three Divisions :—

(*a*) The Senior Division, which is recruited from amongst students of the male sex of any university. "University" means a university established by law in India and includes affiliated colleges, intermediate colleges and technical institutes recognized by the Central or Provincial Government.

The strength of the Senior Division, in 1948, was 15,000. For 1949, it is 25,000 and its ultimate target is to develop 32,500 in the light of experience and availability of trained staff and equipment.

(*b*) The Junior Division, which is recruited from amongst the male sex of any school.

The strength of the Junior Division, in 1948, was 30,000. For 1949, it is 50,000 and its ultimate target is 1,35,000.

(*c*) The Girls' Division, which is recruited from amongst the female students of any university or school.

This Division is just now being brought into existence.

As education is a Provincial subject, the power of allotment of units to universities, colleges and high schools is vested in the Provincial and State Governments.

The principal expenditure for the Corps is dependent upon grant from the Provinces, but the Government of India maintains the Central Organization in the Ministry of Defence which exercises control over the Senior Division of the National Cadet Corps and assists Provinces in running the Junior and Girls' Divisions of the Corps. Regular army officers, on Government pay, are assigned to supervise Cadet Corps units. The Central Government also provides arms, ammunition, equipment and clothing that may be required for training purposes by the units.

43. *Composition of the Senior Division.*—The Senior Division is composed of three wings :

(*a*) The Army Wing, which includes units of the Armoured Corps, Artillery, Infantry, Engineers, Signals, Electric and Mechanical Engineers and Medical Corps.

(*b*) The Naval Wing, which is restricted to towns where facilities for Naval Training are available.

(*c*) The Air Force Wing.

44. *Conditions of Service.*—Enrolment in the National Cadet Corps is now voluntary. This is preferable to compulsory service. Voluntary service will enjoy a better *esprit de corps* than compulsory training.

Cadets have no liability for service but give an undertaking that they will abide by the discipline of the Corps and render themselves efficient.

Enrolment forms are supplied by the Provincial and State Governments to colleges and schools which have been allotted units.

Cadets receive no pay, but rail fares and subsistence are furnished during Camps and Cadre Courses.

In the Senior Division, an undergraduate must be between the ages of 17 and 26 and must enrol for at least two years.

Normally, service should be completed by the second year of college. All cadets must be found physically fit in the physical examination before enrolment in the Corps.

45. *Officers of the Senior Division.*—The regulations governing the officers who will give the instruction for the N. C. C., as promulgated by the Directorate, are as follows :

(*a*) They (officers) will be appointed from amongst the teaching staff of colleges and other institutions. Those gentlemen must be recommended by the Principals and approved by the Vice-Chancellors of the universities concerned. Officers for the Engineering and Medical Units will be selected from the Engineering and Medical Colleges.

(*b*) Teaching Staff selected for becoming officers should possess the following qualifications :—

(*i*) Should *not* be less than 25 and *not* more than 38 years of age.

(*ii*) Should be of good physique, and be medically fit.

(*iii*) If possible, should have been a member of the U. O. T. C. in his undergraduate days.

(*iv*) Must be keen on military matters and be enthusiastic about the National Cadet Corps.

(*v*) Should be a sportsman, if possible.

(*vi*) Those to be officers in the Artillery and Signals Units should be preferably Mathematics and Science Professors.

The teaching staff must agree to abide by the rules and regulations laid down by the Act before proceeding on an attachment of training. Training will be required with a Regular Army Unit for three months for Infantry and Medical Units officers and for four months for all other Units.

These staff trainees will have no service liability, but if commissioned after training, will receive the pay of Regular Army Officers during the period in camp (15 days) and when on recognized courses of instruction or attaching to a Regular Army Unit for training. They will be entitled to free transportation to and from camp and recognized courses of instruction. They will, of course, be entitled to free rations, or cash in lieu thereof during the period of annual camp, and will live in the Officers Mess of Regular Army Units during the training period.

All officers in the Senior Division will be commissioned as Second Lieutenants, with promotions as follows : after three years, Lieutenant, after eight years, Captain, after fifteen years, Major. They will retire at the age of fortyfive.

The Commission suggests that institutions which have not already been allotted Units or Sub-Units, and have not applied, get in touch immediately with the National Cadet Corps Directorate, Ministry of Defence, New Delhi, or the Provincial Government. Either is prepared to furnish any further information required and render assistance in organizing Units.

The Commission was impressed with the verve and smart appearance of some of the Units inspected in the tour. This was specially evident at Banaras, Gauhati and Aligarh, but at other places the Units were not getting started with the same dispatch and fine morale.

46. *Good Features of Present Plan.*—The Cadet Corps, as now constituted and organized, has some splendid features, such as the use of staff as officers for training student cadets. The contacts between staff and students both at the universities, on the drill field, and in camp are the kind that are much needed and will bring rich fruitage in developing discipline, better understanding and good qualities of civilian life already described.

47. *Present Plan not Adequate to Produce Soldiers.*—The Commission is of the opinion that the present plan will not give students the amount and type of training required to make effective soldiers in case of emergency. It is true that cadets do not now incur the liability of service but they should certainly be sufficiently trained to make soldiers who could defend our country in an emergency.

We do not believe that three and four months training with 15 days in camp in the summer is sufficient time to make really effective instructors of the university staff for military purposes. The Armed Forces Institute requires two and a half years to make an officer. In the United States, four years are required to make Army, Naval and Air officers at the Service Academies. In the Land-Grant Colleges and Universities, all of which offer military training, it requires four years to train students to the grade of Second Lieutenant in the Reserve Corps. Two years will be long enough time to train good soldiers but it requires the direction of highly trained officers. History has demonstrated that Indians make splendid natural fighters—as good as any in the world—but war has become very technical and scientific. Physical courage, without expert knowledge and technical skill, is no longer of much avail.

48. *Steps Necessary to make Corps Effective for National Defence.*—To enable the Cadet Corps to produce effective reserves who could serve in the national defence in times of emergency, we make the following suggestions, based upon full knowledge of conditions in the United States, where Military Science and Training has been a part of the offerings of Land Grant Colleges and Universities for many years, and whose products were powerful factors in the winning of two World Wars :

(*i*) The Centre should take over from the Provinces and States the responsibility for the administration of the National Cadet Corps. The defence of the nation and the maintenance of peace are national and not local functions. Local armed units are now being absorbed in the national armed forces. There should be no need for State or Provincial armies in the new era now beginning.

(*ii*) The Centre should detail regular officers and men for instruction in the universities. The character and the number of officers and men would depend upon the size and nature of the Units. The Army, Naval and Air Force, with many variations, would be involved. A single university might have a training programme in one or more Wings with units appropriate to its size and facilities. For example, Medical Units would not be practicable except at universities with Medical Colleges. There should be a top officer of at least the rank of Major, more often a Colonel, who would be the Professor of Military Science and Tactics or Commandant. Nomination of the Professor of Military Science and Tactics should be made to the universities or colleges by the Ministry of Defence and the right of final approval left with the institution. Additional appointments would be made

upon the recommendation of the Professor of Military Science and Tactics. All officers and men would be in the pay of the Ministry of Defence or the Armed Forces.

We believe that with the enlargement of the Armed Forces Institute and its establishment at Poona, the Centre will be able to furnish sufficient officers to man the educational institutions if sufficient personnel is not now available.

(*iii*) The Centre must furnish all equipment, including uniforms. It would defray the expense of summer training camps and it might be wise to allow each cadet a small commutation or allowance which would be the equivalent of the cost of one meal a day.

(*iv*) Where Units involve much equipment or it is of a heavy character such as planes, tanks, artillery, etc., the Centre should make grants for the construction of Armouries and Hangars, when needed, for the proper housing and safeguarding of equipment. There must be a capable Custodian of Property who will make a complete inventory of all equipment, and see that it is protected and accounted for. Guards must be kept around Armouries and Hangars both day and night.

(*v*) There should be a thorough inspection of all Units at least once a year by regular officers who are not associated with the Units. Every phase of the programme and all equipment should be checked and ratings given on the performance, such as excellent, good, satisfactory and unsatisfactory.

(*vi*) At the summer camps, there should be manoeuvres in which Army and Air Units will be coordinated. For example, infantry, artillery, signals, tanks and airplanes must work together if they are to become an effective fighting or defence organization. The Naval Units should take summer cruises.

(*vii*) Enrolment in the Cadet Corps is now on a two-year voluntary basis. The quotas are small but are being increased from year to year. Apparently, the rate of increase is limited by available material and man-power. We think that the present policy is sound.

VI.—Social Service.

No discussion of students' activities, and welfare would be complete without some mention of the Social Cadets, those boys and girls from the universities, colleges and schools who are dedicating themselves unselfishly to education and improvement of the standard of living in the villages of our country.

These activities are sponsored by the Ministries of Education in some of the Provinces and States. We had no opportunity to visit any camps on our tour or to see the workers in action in the villages but their efforts were called to our attention by witnesses and others, notably in U. P., C. P., and Mysore. At Saugor, we saw a batch of cadets who were in process of training. We were impressed with the serious interest and the evident spirit of service which pervaded these young men and women as they sat upon the floor and took instructions. There was pin-drop silence most of the time.

49. *Activities of Social Cadets.*—After their period of intensive preparation, these youngsters who are volunteers, go into Rural Camps usually from three to six months and engage in a multitude of services to the villages. Here are the types of service that they are expected to render. On the educational side they engage largely in teaching adults to read and write, and in developing the crafts and basic education ; on the agricultural side, they touch almost every phase of agriculture, ploughing, planting, compost making, irrigation, preparing seed beds, transplanting, harvesting and on through all the elemental processes ; on the social side, they mingle with the villagers in informal gatherings, indulge in native music, dancing, swimming and games ; on the side of health, they teach methods of sanitation and do practical work along this line.

There are a variety of practical activities in addition to the agricultural, educational, and sanitary measures described, including scouting, motor driving, improvement of roads, etc.

50. *Reactions of the Villagers.*—It has been reported that villagers do not welcome the cadets and their services. It is true that on first appearance, there is some reluctance and even suspicion among the villagers—even the uniforms, which the cadets wear, are distasteful to some. Apparently, these early qualms are soon allayed and, after their programme develops, when properly put on and adequate equipment is available, there seems to be sincere and general appreciation of the efforts of the cadets. The villagers have suffered so much exploitation that they naturally have some scepticism at the first contacts. However, the cadets do so much hard work, give such evidence of knowledge and skill, in a spirit of such friendliness, that the villagers are bound to appreciate the good intentions, the large contribution, and character of the services.

51. *Service Must be Voluntary.*—We believe that all this work should remain on a voluntary basis. We are not here passing

judgment on the suggestions often made by our witnesses that in Medicine, Agriculture, and perhaps in some other technical and applied fields of education, all students should be required to do a period of social service in the villages as a pre-requisite to a degree. That is a matter of educational policy. We are discussing matters from the point of view of student welfare in this chapter. Unless our boys and girls go into the villages because they wish and enjoy social service, the consequences will not be satisfactory to the villages or to themselves.

We note that at least in one province the Government issued a communique to the effect that no male graduates, who had not earned a diploma in social service awarded by the Government would be eligible for recruitment to service under Government or local bodies, or aided or recognized institutions or for admission to technical or training institutions recognized by the Government, for which the Bachelor's degree or the equivalent is a requirement. This government later saw fit to modify this communique, and stated merely that other qualifications being equal, preference would be given to candidates with Social Service training.

We think that compulsion should not be applied to young men and women for Social Service, which is really a contradiction in terms, or undue indirect influence brought upon them by making Social Service pre-requisite to gaining employment or other desirable privileges. Such regulations or rules will kill the spirit of service.

52. *Needs that are Obvious must be Assumed by Government.*—Every one recognizes the importance of the rural problems of the country, the future of the nation is bound up with them ; education, agricultural production, particularly food, sanitation and health these and other vital matters in the villages are the fundamentals of India's destiny. They cry out for effective and quick solution, but they are the responsibilities of all the people to be discharged through the channels of organized and democratic government. They should not be shifted solely to our youth, no matter how sacrificing and patriotic they may be.

53. *No Exploitation of Youth.*—In recent times, there has been all too much tendency to saddle the problems and hastening ills of the nations upon youth. The totalitarian forms of government have exploited youth to the fullest.

It is youth who have worn the black shirts and the brown shirts, who have rendered the salutes, shouted the slogans, fought the battles and died by the millions for dictators and selfish men—

but that is not the free and democratic way of life that we covet for our country. We are proud of the generous and unselfish activities which our young men and women are making to lift the standards of life in the villages. May their numbers increase but let us not exploit them.

Self-Help for Poor Students.—A number of students are admitted to the universities who have not got adequate means to defray all their expenses. Universities generally help them by granting freeships or half-freeships to 10 to 15 per cent. of their students. While some of these free students do well in their studies, it is not always that these concessions are properly used ; many a time it is the unpleasant duty of Heads of Departments to recommend the cancellation of freeships because of the unsatisfactory progress of the free students with their studies. In many cases freeships encourage undue dependence and even lead to pauperisation. The problem is pressing and it is for the colleges and universities to engender a feeling of dignity of labour amongst their students and find adequate means of self-help for the poor but intelligent youth. In the University of Florida, before World War II, out of a total expenditure of about 2 million dollars, about 1,00,000 dollars were earned by poor students by working in kitchens and dining halls, offices, libraries, laboratories and workshops. If we introduce various electrical appliances and properly equip our kitchens and dining rooms, some of the work in them may be undertaken by the poorer students. If our students acquire a sense of responsibility, we can also entrust them with work in our university offices, libraries, laboratories and workshops. A reasonable number of hours of work once a week should enable a student to earn the right of free tuition at the university. If the universities can properly organize a complete scheme of work, it should not be difficult to put it into operation.

VII.—Hostels and Residence.

54. *Importance of Living Conditions.*—No single factor has a more vital effect upon the atmosphere and morale of a college or a university than the prevalent conditions under which students live. Convenient and comfortable quarters for study and sleep, sufficient and wholesome food at low cost, are essential to good spirit and the best progress in university work.

These conditions may be found where students are housed in hostels properly organised, equipped and supervised. Unfortunately most universities and colleges in India do not have adequate residential and dining facilities for students. As a general rule only a small fraction of the students find accommodation in hostels. A few colleges do house all their students but these are mostly colleges

for women where it is imperative that supervision be provided. Women students must be directly under the guidance of the college authorities unless they live with parents, with relatives or actual guardians.

Hostels are usually managed by Superintendents, Wardens or their Deputies, with an appropriate staff. It is desirable for some teachers to live in the hostels under all conditions.

55. *Deplorable Conditions.*—We visited colleges with enrolments running over five thousand students which had no provision whatsoever for residential accommodation. Such conditions are deplorable in the extreme. These colleges are affiliated to universities in the larger cities. We recommend strongly that universities insist as a condition of continuance of affiliation that colleges provide hostels and corporate activities for an appreciable portion of their students in a definite and reasonable time, and that no colleges be admitted to affiliated status in the future which make no, or inadequate, provision for wholesome living among the students. Experience has clearly demonstrated that hostels or residential units of a small size promote better welfare than do large structures, both on the cultural and the physical side, unless the latter are broken up into segregated units. Sections should be constructed so that occupants do not inter-mingle between units. A block of fifty students in a single section or unit is the maximum size we recommend.

56. *Best Conditions of Living.*—One or two students in a single room is the ideal arrangement with a common space for study if there are two. The commission found hostels in which four or more students were sleeping in space intended for one or two. Sometimes conditions were insanitary and furnishing inadequate.

At one university, students were expected to furnish their own beds or sleep on the floor. Even women students were subjected to this practice. Apart from other questions involved, such conditions create a most undesirable social attitude on the part of the occupants of a room in which it occurs.

All the ordinary furnishings necessary for comfortable living should be supplied to students. These should include beds or cots for each student, chairs, tables, clothes-cabinets and book-shelves. The latter two items may be advantageously built in the hostels. The student is expected to supply bedding, towels and linen. Baths, toilets and lavatories should be available for each ten or twelve students. This is highly important if health and convenience are to be conserved.

In some hostels, dormitories in which a dozen or more students sleep and use separate rooms during the day for study and other purposes, offer satisfactory living conditions.

The most crucial test of good hostels pertains to the dining facilities. If armies march on their stomachs, students live and die with theirs. Poor and unwholesome food not only breeds malnutrition and disease but can become a centre of seething discontent. The boarding arrangements tie up closely with discipline or indiscipline.

It is a matter of reproach that kitchen and dining arrangements in our colleges and universities are generally very primitive. While gas and electricity are used in laboratories and electric lights and fans in college and university buildings, fire-wood and charcoal are still being used in our hostel kitchens. We were pleased, however, to see the clean kitchens and dining rooms at the Wadia College, Poona, where all cooking is on electric stoves and smoke and dirt are automatically avoided, meals being served to batches of students at stated hours. We recommend these arrangements for adoption by other colleges and universities as early as possible.

57. *Importance of Dieticians.*—All dining places should be under the direction of a trained dietician who thoroughly understands food values in terms of calories, proteins, starches, fats, and the like, as well as the proper balancing of the meals. The Ministry of Health of India estimates that eighty percent of the population is suffering from malnutrition in some form. This lowers resistance and heightens the incidence of disease. Therefore, a competent dietician is of prime importance. If one cannot be found, employment should be tendered to some one who will acquire the training as quickly as possible.

58. *Types of Dining Facilities and Basis of Admission to Hostels.*—There should be two types of dining services in every hostel or at a convenient distance—namely, vegetarian and non-vegetarian, and other arrangements should not be permitted. All dining rooms should be strictly cosmopolitan in character. Communal hostels, now being operated at certain universities, should be abolished. Students should be admitted to hostels strictly on a basis of priority or other desirable impersonal grounds. No discrimination should be made because of race, religion, regionalism, language or politics. In some hostels the Commission found students segregated faculty-wise, arts, science, etc., each housed together. We do not regard this as a satisfactory plan, except for certain professional students who require special hours, or post-graduate students past the Master's degree and for research students. Students of different subjects profit by gathering together in intimate social intercourse. The humanists must know the scientists' view of the world and *vice versa*. The bond of mind which ties together the members of a

university into one circle depends to no small extent upon the reciprocity of thought, the vital stimulus, the impulse to ever fresh activity which the members constantly receive from others who are experiencing different interests.

Generally speaking, this Commission favours as much intermingling among students as is possible in the hostels and suggests an age-range of four years as a desirable principle upon which assignment can be made. This should be flexible in its application; the younger students, say from 18 to 22, of different faculties living together ; post-graduate and professional students, say from 22 on, living together, etc.

59. *Importance of Mingling of Staff with Students.*—A common room is an essential adjunct to a hostel if proper social intercourse, recreation and other extra-curricular activities are to be furnished as they should. Many witnesses testified to us that the present lack of the development of personality is due to the inability of students to know the staff. If some of the teachers can live in the hostels and become tutors or advisors, this is most fortunate. Visiting by staff members in the rooms of students and, especially in the common room, is a most valuable contact. In this way guidance becomes imperceptible and most helpful.

60. *Development of Corporate Life.*—In lieu of staff members, a desirable development is to place students of good character and accepted scholarship in sections or small units as monitors. Where student government has been properly developed, student monitors are the best means of securing salutary and sound conditions in hostels. By giving to students a real measure of responsibility in running the affairs of the student community, we develop in them a sense of public spirit. They must feel that the honour of the community is entrusted to them. There must be proper regulation for study hours and sleeping. Disorderly conduct and noise and the like must be controlled. In the case of women students, proper provision must be made for visitors in the college and for absence off campus as well as other details.

61. *The Hostel is a Part of Education.*—The hostel is not simply a place to eat and sleep or even study though these are indispensable. Living in a hostel is an important part of education, it is a way of life and here students learn to live decently or indifferently or even in uncouth fashion. It has been said in criticism of some college men that they cannot be distinguished by their manners. The character of hostels and the conditions which surround them will determine whether this charge is valid.

The wisest procedure in the administration of dining halls for the purpose of securing smooth and successful operation is

the use of students in the programme. For this purpose there should be a careful selection of students of advanced standing, character, and scholarship. They should be paid at least a nominal sum for this service. As food is often a source of criticism, even when provided in the best fashion, it is a prudent step if students are permitted to co-operate in making eating facilities as attractive as possible.

Students are well motivated in doing a part in the hostels because they are the ones most affected. If things are not going well students suffer and when hostels are rendering good service, students benefit. Participation not only may assist needy students in earning at least a part of their college expenses, but will enable them to derive sound education in the process by acquiring the right social and democratic attitudes towards their fellows.

Where students do nothing practical in the hostels they should be asked to give advice and suggestions and even criticisms of a constructive nature. If student government has been developed properly, student participation in matters such as hostels takes place quite naturally and effectively.

The Commission recommends that hostels be built on the campus as far as possible. The buildings should be erected in blocks with rooms for accommodation for not more than fifty students with a dining room and a common room in the centre which can serve four or five blocks of residential units. It is highly important that some space be provided for playgrounds at a point convenient to the hostels.

62. *Residence off the Campus.*—Most students of our universities live outside the campus compound. This is in itself a misfortune but the unfortunate aspects are heightened by the unsuitable conditions in which many students are required to live, particularly in congested localities. Some of the habitations are unfit either from a sanitary or a social point of view or both. Students are sometimes the helpless victims of mercenary or even unscrupulous landlords. All too frequently, students living in lodges and outside residences lack the opportunities of corporate life which hostels, playgrounds, and common rooms afford.

At some places, attempts have been made to attach these off-campus residents to hostels and other facilities in the compound but this has not always been successful. It is better to put up a special building in a suitable locality, in which the ordinary corporate facilities are provided. This is sometimes costly, but is the least that can be done to ensure a salutary solution of the problems involved. Without social recreation, games and common rooms, the students are not only deprived of much of the benefits of education but the student spirit of university may be demoralized.

We suggest that all licensed lodges and living quarters, which are used by students not accommodated in hostels, be rigidly inspected for sanitary and social conditions, rates, location and other pertinent aspects of good life for young people. Approved lists of satisfactory lodges should be made under the auspices of the Committee on Health, Residence and Discipline or other appropriate body or office. Students should not be permitted to live in unapproved quarters. If a Dean of Students is appointed, as recommended hereafter, lists of approved lodges should be kept in his office.

VIII.—University Unions.

63. *Beginning and History of Unions.*—When the new teaching universities started work, it was felt necessary that for the organisation of the corporate activities of students, University Unions on the lines of those at Oxford and Cambridge were necessary. These Unions were intended to be students' organisations whose primary work would be to foster the debating powers of the members, to organise dramatic performances and poets' assemblies, to maintain a library and a refreshment room, and to promote the general social life of the university. In some universities, membership of the Union was made compulsory for all students, in others it was voluntary. The constitution of the Union has differed from one university to another. At one university the Vice-Chancellor is ex-officio President of the Union but a student Chairman presides over its ordinary meetings. At others, the Vice-Chancellor is the Patron and the office-bearers are mostly students, though the person in charge of the funds is usually a member of the staff. The Managing Committee of the Union has in some places more than one representative of the teaching staff, but it is generally made up of a majority of students.

64. *Period of Stress.*—The life of these University Unions has been a chequered one for they functioned at the period of political struggle and formed a forum for the political activities of the students. Instead of holding debates of their own, the students generally preferred to invite political leaders and listen to their orations. When the political struggle grew intense the Unions were looked upon with great disfavour by the authorities, and in some cases they were even suspended. Now that the political troubles are over the Unions can occupy their rightful place as the centres of social and corporate life in the universities. There is no reason why elections to the Union should be fought on the tickets of the different students' organisations like the Students' Federation, or the different sections of the Students' Congress which are now run on political lines. It is hoped that these latter organisations will in the near future be entirely independent of political and social groups. As things are at present the intrusion of their politics is harmful for University Unions.

65. *Aims of the Best Type of Union.*—The principal function of a University Union is not to discuss the controversial politics of the day nor to think of the administrative problems of the university but to be the main link in the corporate activities of the university students. Each university has a number of clubs and associations connected with its hostels and departments. These organisations do useful work in allowing different sections of the students to meet together to exchange ideas and to promote social contacts. The University Unions can be a federation of all these subsidiary associations where students assemble not for the discussion of sectional interests but of topics of much wider significance. If the aim of a university is to ensure the all-round development of the growing adult, the function of the Union is to do the same thing for intellectual development as the athletic association does for physical development. The details of the constitution of the Union are not important but it is material that each member must regard it as the most important association of the university and strengthen it. It is a pity that compulsion has to be used in some universities to make the Unions sufficiently strong in membership and finances. The essence of the Union should be that it is of the students and for the students without any interference from the authorities of the university.

IX.—Discipline.

66. *Discipline is Universal Problem.*—Human nature knows no national boundaries. The sun never sets upon problems of conduct. Some youth at home, in school and in college gravitate into patterns of conduct which create concern for parents and teachers. Surplus energy, not finding a legitimate outlet, misadventure, idleness, and occasionally malice, all conspire to create mischief and irregularities of conduct. Problem cases and indiscipline peculiar to college life are inevitable, but there is a wide difference in the extent of these in different parts of India.

67. *Indiscipline Arises from World and Local Conditions.*—Some of the unrest in college groups now appears to start from world conditions. Ferment is international and continental, a condition that follows in the wake of wars, and is more acute now than ever before. " We should not forget that we are living in a period of confusion and conflict. This is a world-wide phenomenon. This has an unsettling effect upon the youth of every country " was one of many similar expressions from our witnesses.

Other witnesses cited the period of the struggle for national independence, in which students and staffs were called upon by political leaders to engage in agitation, as a general cause of indiscipline carried over to the present. Such action may have served a patriotic purpose in an all-out drive for national freedom, but such practices

now have a reverse effect, they promote confusion and become a serious impediment to national solidarity and integration.

68. *Anarchical Elements Exploit Students.*—Unfortunately, some political cliques and even anarchical elements are continuing to exploit college students for their purposes. During the visit of the Commission to Calcutta, a riot was started in which students were apparently used as pawns and which issued in blood-shed and lawlessness that continued two or three days. This disorder was the work of anti-social and violent elements, and neither the university nor students could be held responsible.

69. *Universities should be Divorced from Party Politics.*—Students should not be encouraged to engage in party politics though we think it desirable that they take a wholesome and proper interest in election and good government. If the staffs are enlarged as they should be there will be opportunity for effective mingling of teachers and students. Leadership can be employed which will eradicate the forms of selfish exploitation now in vogue in a few quarters. The fact that many staff-members were side-tracked in the drive for freedom has weakened in some measure their assumption of active responsibility which all staff members are expected to discharge.

The situation calls for firm but judicious action on the part of college authorities. Further deterioration in morale should be prevented. The Commission was delighted to find that in some places the problems of discipline were negligible, and wise and constructive policies were being used in the sphere of student life.

70. *Causes of Indiscipline are Varied.*—The sources of indiscipline are many, but among the most general though indirect causes often cited by our witnesses were meagre finances and consequent lack of amenities required for healthy college life. Closely related to these elements is the economic distress of some of the institutions which lack the means to provide adequate hostels and comfortable living conditions, play-grounds and desirable corporate activities for students. The masses of students, the failure of parents at times to support the college authorities, the inability of the teachers to cope with confused thinking, admission of students without the intelligence or industry requisite for successful study, tensions over examinations which unfortunately dominate the educational system, financial worry caused to poor students by the cost of university education—all these contribute to the difficulties of maintaining the best conduct and welfare of students.

71. *Constructive Approaches to the Solution of Disciplinary and Allied Problems.*—The key to the successful handling of young people is not found now-a-days in a multitude of restraints and reprimands

or in the infliction of continuous penalties. These devices may have to be resorted to in extreme cases but wholesome student attitude and life cannot be created by negative and repressive measures. The true sanction of discipline lies in the development of the social conscience of the undergraduate body as a whole rather than in punitive measures or precautionary vigilance. As in society so in the university laws are observed because they are approved by reason rather than because they are imposed by force. Indiscipline should be terminated by the good sense of the students.

72. (*a*) *The Proctorial System.*—The disciplinary system of Indian universities is generally a proctorial system, presumably adopted from Oxford and Cambridge, but with many modifications. Proctors are charged with the maintenance of proper supervision and correct discipline. There are in addition other officers such as provosts, superintendents, wardens, monitors and others who have jurisdiction in limited areas of residential groups, hostels, examinations,—off the campus and in the college compound. It goes without saying that all members of the staff should be responsible for proper social and ethical behaviour on the part of students with whom they are in contact whether in lectures, intra-mural life, or elsewhere.

It is the strong sentiment of this Commission supported by ample testimony of witnesses that the proctorial system is not adequate for handling students in the present conditions.

Some of the universities which have the minimum of disciplinary problems have no proctorial system at all. The answers of the university of Madras, for example, on these points were : "*No proctorial system exists in this University*, nor are there courts of honour ; The political turmoil through which the country passed recently has also contributed its own share to the growing indiscipline, which it doubtless will take some time to eradicate. Ill-digested ideas of the elements that go to build a true democracy and an imperfect realization of what independence stands for have also contributed to the present state of affairs. It is hoped that this is, however, a passing phase, *as on the whole*, the bulk of the students are disciplined, well-behaved and easily amenable to the influence of teachers."[1]

The proctorial system creates the thought of espionage in the minds of some students who feel it is based upon punitive measures for its results ; that fines and " gates " are penalties for minor offences while serious offences call for suspension, expulsion and rustication.

We recommend that students be given the opportunity to develop self-respect and self-reliance through an attitude of trust rather than live in an atmosphere of suspicion and fear.

[1] Reply to Commission's Questionnaire, University of Madras, P. 17.

73. (*b*) *Proctorial System in which Students Participate.*—As rapidly as the spirit of responsibility is developed among students, they may be entrusted with an ever increasing share in self-government. The modern youth cannot be driven by fear. Normal boys and girls can be led more effectively by imposing trust and appealing to honour. They usually respond to Burns precept ;

"The fear of Hell is a hangman's whip
To haud the wretch in order
But where you feel your honour grip,
Ay, let there be your border."

Where the proctorial system is in vogue, it works best if the students participate in it. This removes distrust, breeds a sense of responsibility, and becomes an important aspect of education for participation in after-life. Some universities which are trying out Proctorial Boards and Courts of Honour are having encouraging success. We noted with satisfaction one university Proctorial Board composed of sixteen students and eight staff members, including the Proctor, which was functioning exceptionally well. All recommendations of punishment emanate from the students and they incline to be less lenient than the staff members of the Board. A salient feature is the ability of the Board to control strikes and mass action of students through leadership from the student members of the Board.

74. (*c*) *Student Government Recommended.*—Student government has been used effectively in some universities and colleges in the United States. In a few colleges in India, the Commission found student government and honour systems operating apparently with excellent results. This can be accomplished under the proper conditions. The student strength should not be too large in proportion to the staff and the selection of students should be such that unfit elements are eliminated. The students should be accommodated in hostels or well-conducted lodges with ample facilities for corporate life of all kinds.

75. (*d*) *Student Government Functions well at Colleges for Women.*—The Isabella Thoburn College for Women at Lucknow is an illustration of a college in which student government operates effectively and smoothly. In the Constitution of the Student Government Association its objectives are set out as follows :

> "The purpose of this Association shall be to maintain order and decorum in the buildings and on the campus ; to promote active cooperation among all members of the college community, to foster an intelligent interest in all phases of college activities ; to increase the sense of individual responsibility, personal integrity, and loyalty

to the highest ideals of the college; to prepare its members to take their proper share in serving and advancing the best interests of their nation and of the world.

The Staff and Administration will delegate to the Student Government jurisdiction over student behaviour on the campus and such matters as do not in the opinion of the College Council infringe upon the following subjects which the Administration hold under its own control;

1. Academic matters.
2. Matters of health and safety.
3. The use of College property.
4. Business management (both in hostels and tuitional affairs).
5. Matters of discipline, too serious to be dealt with by the Student Government alone."

A member of the staff attends all meetings of the Association in an advisory capacity.

All residential students of the college are *ipso facto* members of the Association, and the annual membership fee is eight annas.

There are two standing committees, the Executive Committee and the Judicial Committee. The latter committee, which handles matters of discipline, consists of seven members, the Principal of the College, the Chief Warden, and five students which include the President and the three Vice-Presidents of the Association.

The Judicial Committee has the powers to deal with all cases of discipline within the jurisdiction of the Association. The three Vice-Presidents are responsible for fostering and directing of social activities in the hostels. A Board of Proctors elected three times a year, meets fortnightly and is responsible for keeping order throughout the college. They regulate hours of study, quiet, rising, retiring and rest in the hostels. They also handle such matters as leaving the campus, visiting in homes (with permission of the Chief Warden), attending Motion Pictures, religious meetings, etc.

In addition to the maintenance of orderly life on and off the campus, the students through the Student Government Association direct such activities as student publications, athletics and other corporate life.

76. (*e*) *Advantages of Student Government.*—Good Student Government integrates the college community, imparts a wholesome social atmosphere, fosters common ideals and loyal pride in an institution but most important, provides training for good citizenship and social responsibility. It gives scope for the right type of student political activity, which helps to develop the capacity to

play the role of citizens in a republican form of government and a democratic society. It replaces the undesirable tendencies toward undermining respect for constituted authority and leaving youth a prey to propaganda of conflicting ideologies.

77. (*f*) *Other Measurses for Promotion of Good Discipline.*—The National Cadet Corps is a most useful form of developing discipline and orderly habits among students. Opportunities for recreation, athletic sports, amenities of social life, especially for students residing outside hostels (who are often neglected), all play their part in good discipline. These are dealt with elsewhere in this chapter. It is noted that Students' Unions have become infected at some places with communalism and strange ideologies. The proper functions of debating, social improvement and liberal thinking should be promoted if the Unions are to be an asset rather than a liability in producing the best student conduct. A major principle in maintaining discipline involves keeping students active and engaged upon worth-while and constructive lines. Students who carry heavy loads of an academic character with considerable practical work, ought to have less temptation to fall into indiscipline than those who are not very busy. Students with light academic loads should be given sufficient intra-mural opportunities to keep them active. Student Government provides a valuable medium for this kind of outlet.

Close contact between staff and students is the most valuable medium of stimulating good behaviour, character and worthy ideals among students. This can be attained in small residential colleges without great difficulty, but becomes almost impossible in the mass education that has overwhelmed many colleges and universities.

It is important that good discipline be looked upon not as student conformity to arbitrary standards of conduct, but rather as individual responsibility for behaviour. Peace and order maintained by rigidly executed rules is totalitarian, not educative, in method. Some of the student disturbances in India today may be initiated by students who do feel a personal responsibility for their action, and yet do not show mature judgment in its evaluation. While such situations call for disciplinary action, they call more directly for educational action and attitudes. The causes for such disturbances are complex, and their solution will be achieved, not by punitive force, but by a process of educational development undertaken in an attitude of sympathy, understanding, and mutual helpfulness between the staff and the students. It is the responsibility of college and university teaching staff the world over to determine whether their primary aim is to keep the administrative machinery running smoothly, or to educate the students. Neither aim should exclude the other, but it is some-

times true that where the course of university operation is pursued at the expense of student growth and development, discipline is maintained by compulsion. It is true that students entering college represent varying levels of maturity and emotional development. Some are more capable of self-direction and responsibility than others. When students of limited background find differing outlooks and practices in college, there is a tendency for them either to defend emotionally their own or to reject blindly their own for the new. It is right that guidance toward certain patterns of conduct be undertaken by the college. On the other hand, such guidance should not assume uniformity of conduct as its end. When students whose conduct diverges from the norm have the maturity for honest self-appraisal, together with personal assumption of responsibility for their conduct, it is the responsibility of the university, as it is of society, to respect such behaviour unless or until it can be proven harmful or false. Uniformity of conduct is not the means to good discipline, nor the necessary result of good discipline. Colleges with disciplined, mature students, often reveal wide differences in student outlook, behaviour, values, interests. They do reveal one common feature : a concern for helping students to develop a personal life philosophy to which they are committed. Differences in outlook and practice, held responsible though open-mindedly, are essential to a vital society. They are the correctives to convention and habit upon which the progress of mankind has depended.

78. *The Problem of Discipline Requires Co-operative Effort.*—But administrators and teachers cannot solve satisfactorily the problems of promoting good life and high ethical standards on campuses. They must have the co-operation of the parents, the political leaders, the public and the press. This is a co-operative task which deserves the support of all good citizens. The outcome is significant not only for higher education but for the sound growth of our country.

79. *Student Government will succeed if Persistently Applied.*—There is no justification for the opinion sometimes expressed that indiscipline is beyond control in our universities. There are serious problems in some places, but none that cannot be solved if intelligent, constructive and, at times, vigorous action is applied. Unfavourable situations arise largely from lack of active responsibility on the part of officers and staff, a policy of drifting, and the absence of complete cooperation on the part of those both within and without the universities. We are of the definite opinion that policies which we have advocated, if properly pursued, can create a wholesome attitude and right action among university students who are idealists the world over, and generally less compromising with wrong than older persons who more often resort to expediency.

If the first attempts to establish student government and participation in disciplinary responsibilities do not appear successful, authorities should not desist, as a period of time is usually required to permit young people to acquire self-confidence and educate their fellows.

X.—*Student Welfare.*

80. *Need of Corporate Life.*—An unfortunate corollary of the conception of the university as an examining machine is the absence of corporate life. The great universities of Taxila and Nalanda in ancient India and the Renaissance universities of Europe were communities of scholars who enjoyed a way of life surcharged with learning but not without its spiritual amenities and social attractions. The university is not a barren ante-room to life, it is a part of life and should be a happy, rich experience and not a hard round of lectures and laboratory assignments fulfilled under trying circumstances and compulsion. The student who does not live on the campus, who has no part in extra-curricular activities, who never lives in a hostel or eats in a dining hall, and who does not join a Union, may get a degree but has missed many of the values which the university affords.

We think that there should be some fragment at least of the complex university organization of today which is concerned with the planning, enriching and supplying the sinews of real, genuine life among students.

81. *Functions of Office of Dean of Students.*—In the United States, where all colleges and universities have teaching functions and each possesses its own academic spirit and atmosphere, student life abounds and determines in a large degree the character of the institution. In the heart of every campus is an office, that of the Dean of Students, which works full-time upon the problem of helping the students to plan their lives. It is concerned with how or where students live ; it assists the needy student in finding work if he requires financial aid, or recommends him for a scholarship or loan if he is worthy ; it knows about his habits ; it discovers whether he is failing at any important point such as health, morality, or class work, and moves to assist him ; it sees that he gets a fair opportunity to enjoy the social and recreational life ; in short, the office of Dean of Students is a place constantly on the alert to promote student life, academic, social, moral and material, and prepares to give advice on every subject ranging from where to buy pencils up to matrimonial perplexities.

82. *Board of Student Welfare Recommended by Calcutta University Commission.*—The Calcutta University Commission gave considerable attention to the problem of student welfare and to the

bleakness of student life. It recommended a Board of Student Welfare composed of a rather large group of important persons which would include, among others, the Vice-Chancellor, Dean or other representative of the Faculty of Medicine, the Director of Physical Education, Principals or other representatives of colleges, representatives of hostels, the Medical Officer of Health, the Sanitary Commissioner, a limited number of outsiders co-opted by the Board, and others.

It envisioned the functions of the Board of Student Welfare as :

(*a*) Health of students.
(*b*) Physical instruction.
(*c*) Organized games and recreation.
(*d*) Questions of residence.

To these we might add :

(*e*) Assisting poor students, either through scholarships or loans or by opportunities for self-help.
(*f*) Disciplinary problems.
(*g*) Student publications.
(*h*) Vocational guidance and life planning.

83. *Organization of Office of Dean of Students and Board of Student Welfare.*—There are other services to be rendered but the above constitute some of the principal functions. In universities, there would be need for a Dean of Men and a Dean of Women. Men's colleges would have only a Dean of Men and Women's colleges only a Dean of Women. Each office would require a small clerical staff. Such matters as keeping track of loan funds, awarding scholarships, finding jobs, keeping lists of approved lodging houses and like matters require the keeping of records and some financial accounting. One office, with a Dean of Men and a Dean of Women, can serve a residential and teaching or federative university. Isolated colleges whether constituent or affiliating, could not be served from a central office and could participate only by setting up their own offices or they could be operated as branches under the general auspices of the central office. The appointment of Deans of Students should be recommended to the Executive Council by the Vice-Chancellor or by Principals, and they should be directly responsible to these officials.

Deans of Students should be carefully selected. The duties require more natural talent than training. Persons who understand students, who enjoy working with them but who possess firmness and qualities of leadership together with administrative ability, are the types who succeed best. Persons who endeavour to drive or who lack powers of decision, will fail. No one should be appointed who has not had considerable experience as a teacher, and particularly along lines of tutoring, guiding and advising.

We do not think that a Board such as was suggested by the Calcutta University Commission would be adapted to situations outside of Calcutta, and even that could meet only once or twice a year. Student welfare requires active and constant attention if it is to find its proper fruition, now badly needed.

We would suggest an office headed by a Dean of Students or other full-time officer with the status and pay of a Dean, with duties and responsibilities similar to the Dean of Students which we have described. We think that a small advisory Board of Student Welfare of not over a dozen persons, composed of local individuals, might be desirable. Such a Board could be convened rather easily and could be made to render real assistance in solving student problems and promoting student welfare. The Board of Student Welfare could well include the Vice-Chancellor as Chairman, the Dean of Students as Executive Secretary, the Dean or other representative of the Faculty of Medicine, or the University or College Physician where no Medical College exists, the Director of Physical Education, Chairman of the Committee on Health, Residence and Discipline, Principals or other representatives of colleges, representatives of hostels, and two or three prominent citizens coopted from the community outside the academic circle. We think several students nominated by the students themselves would be a most helpful addition to the Board of Student Welfare.

84. *Recommendations.* We recommend :—

II.—Selection of Students.

1. that admission to universities and colleges be based upon merit without discrimination of any kind ;

2. that in the first degree stage, the widest possible variety of courses be offered to enable local students, qualified to benefit by an education, to have opportunities which would otherwise be denied ;

3. that at the post-graduate, professional and advanced research stages, universities should concentrate and coordinate their activities ;

III.—Scholarships Examinations.

4. that scholarships be awarded by examinations on a basis of merit to gifted but financially needy students ;

IV.—Health.

5. that all students, both men and women, be required to take, at no cost to themselves, a thorough physical examination at admission and periodically thereafter, at least once a year ;

6. that all universities, with or without Medical Colleges, must have hospitals and dispensaries for student service ;

7. that students suffering from infectious, chronic, or endemic diseases be denied admission unless the university or college has available facilities for isolating and treating those who may have curable diseases ;

8. that all staff members and employees of colleges and universities, especially food-handlers, be examined before employment and the latter periodically thereafter, at least once a year ;

9. that health service should include sanitary inspection of campus, buildings, hostels, dining rooms, kitchens, and off-campus residences, and regular reports submitted to the Vice-Chancellor or other responsible administrative officer ;

10. that a nutritious meal be furnished at noon at reasonable cost ;

11. that all students be required to be vaccinated against small-pox, and inoculated against cholera, typhoid and the plague ;

12. that a post-graduate degree course leading to a doctorate should be set up at one university in each Province where Directors of Physical Education may be trained ;

13. that each university and college remote from a university centre shall have a Director of Physical Education with the status, pay and training comparable to heads of other departments ;

14. that provision of gymnasia, playgrounds and equipment are essential to physical education and health ;

15. that two years of physical education be required for all students, men and women, except those who are physically unfit or who are in the National Cadet Corps ;

16. that physical examinations be followed up with corrective exercises in cases revealed by the examinations ;

17. that adequate staff be provided for compulsory physical training, and a regular time be assigned for this purpose ;

18. that all physical education activities and courses of study be under the Director of Physical Education ;

V.—National Cadet Corps.

19. that institutions which have not been allotted Units or Sub-Units of the Cadet Corps and have not applied, contact immediately the National Cadet Corps Directorate, Ministry of Defence, New Delhi, or the Provincial Government ;

20. that the Centre should take over from the Provinces and States the responsibility for the administration of the National Cadet Corps ;

21. that the Centre should detail Regular Officers of the Army, Navy and Air Corps for instruction in the universities and college s ;

22. that the Centre must furnish all equipment, ncluding uniforms, defray expenses of training camps, and provide a small commutation for each cadet, equivalent to the cost of one meal a day ;

23. that for housing equipment, armouries or hangars or both are necessary ;

24. that there be an annual inspection and rating of all units by Regular Officers not associated with the Units inspected ;

25. that there be manœuvres in the summer in which Army and Air Units work together; that Naval Units take cruises in the summer ;

26. that enlistment in the Cadet Corps be continued on a two-year, voluntary basis ;

VI.—Social Service.

27. that Social Service be encouraged and remain on a completely voluntary basis ;

VII.—Hostels and Residence.

28. that universities establish reasonable standards for hostels, residence and corporate activities as a condition of college affiliation, that these standards be enforced and that no affiliation be granted in the future until standards have been met ;

29. that universities supply all hostels with usual furnishings except bedding, towels and linen ;

30. that all dining rooms in hostels or on the campus be under the direction of a trained dietician ;

31. that both vegetarian and non-vegetarian diets be furnished, and that no other arrangements be permitted ;

32. that all hostels be cosmopolitan in character and the present communal hostels be abolished ;

33. that students be admitted to hostels on a basis of priority of application, and assigned to hostels in age groups of four-year limits ;

34. that some staff members should live in hostels and mingle with students as much as is practicable, both as tutors and socially ;

35. that advanced students of good character and accepted scholarship be used as Monitors in hostels and in minor roles in dining rooms ;

36. that hostels be constructed in blocks of not more than fifty students per block, with common rooms and dining halls for four or five blocks ;

37. that large hostels be broken up into sections with accommodation for not more than fifty students in each section ;

38. that playgrounds and corporate activities be convenient to students living in hostels, and also in off-campus lodges ;

39. that all lodges and off-campus residential units be rigidly inspected for sanitation, social desirability, location and other pertinent considerations ;

40. that students be required to reside in approved lodges and living quarters ;

VIII.—University Unions.

41. that University Unions should be as free as possible from political activities ;

42. that the Union should be the principal centre of student corporate activities, and the federative link of all student organizations ;

43. that the Union be operated by students and for students without interference of university authorities ;

IX.—Discipline.

44. that students be encouraged to take interest in good government, but not in party politics ;

45. that a modified proctorial system, in which students will play a large part, or student government, be developed ;

46. that teachers, parents, political leaders, public and press cooperate in promoting proper life among students ;

X.—Student Welfare.

47. that an office of Dean of Students, be set up in colleges and universities ;

48. that an Advisory Board of Student Welfare be organized in universities which do not have such a body.

CHAPTER XII

Women's Education

I.—Importance of Women's Education for National Life.

1. The Primacy of Women's Education. 2. The Education of Women as Women. 3. Preparation for Home and Family Life.

II.—Special Courses.

4. Home Economics. 5. Nursing. 6. Teaching. 7. The Fine Arts

III.—The Future of Women's Education.

8. Present Conditions in Women's Education. 9. Suggestions for Improvement. 10. Co-education. 11. Appraisals of Women's Education. 12. Recommendations.

I.—Importance of Women's Education for National Life.

1. The Primacy of Women's Education.—" If the Government by the initial exclusion of the masses accentuated the segregation of the masses from the privileged few, by their initial restriction of their (educational) efforts to the male population, they brought a line of division where it had never existed before, within the household."[1] While the movement for equal education for men and women began in Great Britain about a century ago with such serious thinkers as Fredrick Maurice, who was a founder of Queen's College for women in 1848, and John Stuart Mill, whose " Subjection of Women " was published in 1869, it did not reach India until several decades later. Even today the inequality is evident. According to the statistics issued by the Indian Ministry of Education for 1945-46, there were six and a half times as many boys and men in secondary schools and colleges as there were girls.

The underlying habits of men and women are largely fixed in the early years, and these years are spent chiefly with the mother. If she is open minded, inquiring and alert, looking behind rumour and tradition to find the facts, concerned with the course of events, informed about the nature of the world around her and interested in it, and acquainted with history and literature and enjoying them, then her children will learn these interests and attitudes from her. The educated, conscientious mother who lives and works with her children in the home is the best teacher in the world of both character and intelligence. Much of what she learned at school her children get unconsciously as second nature by living in her company. In a society made up of such homes children starting to school already have a background of information, understanding and culture which result in their getting more benefit from school than otherwise would be possible.

[1] **Arthur Mayhew, *The Education of India*, 1926.**

There cannot be an educated people without educated women. If general education had to be limited to men or to women, that opportunity should be given to women, for then it would most surely be passed on to the next generation.

2. *The Education of Women as Women.*—General education for interesting and intelligent living and for citizenship in large part can be the same for men and women. We have heard frequent suggestions that women's education should run to pretty " accomplishments " such as drawing, painting or the like—skills which will enable well-to-do women to pass their time harmlessly while their husbands do the really important work. This point of view should be obsolete. Women should share with men the life and thought and interests of the times. They are fitted to carry the same academic work as men, with no less thoroughness and quality. The distribution of general ability among women is approximately the same as among men.

Yet, though men and women are equally competent in academic work, and though many subjects are equally interesting and appropriate, it does not follow that in all things men's and women's education should be identical. Indian universities for the most part are places of preparation for a man's world. Little thought has been given to the education of women as women. Women must share the same programme as men or go without. There are ways in which many women's interests or appropriate fields of work diverge from those of men, and educational programmes should take that fact into account.

In every country, no matter how far the " liberation " of women has gone, husbands and wives commonly play different parts. In general the man provides the income and the woman maintains the home. For many women who crave to achieve standards of excellence, the home provides an excellent setting. For a woman to give the home design, beauty, order and character, without being herself a slave to home-keeping and without imposing onerous prohibitions and restrictions on the freedom of movement of children, is a high art. It will not be acquired by chance, and for many women its acquisition will be impossible except through education.

The home itself can be a work of art, even though it must be maintained very simply and economically. In fact, simplicity may be the highest expression of beauty. In the Western world, homes tend to be crowded with belongings, as though the achievement of a beautiful home were a matter of acquiring furnishings or other works of art. In Japan, great simplicity and restraint in furnishings and ornaments, with skill and taste in selection and arrangement,

are the characteristics sought. The Japanese course has much to commend it. Aesthetic skill in the furnishing and arrangement of the home can be a constant source of satisfaction to the family and to guests.

Women have demonstrated their ability to think and work alongside of men. Why not take that ability for granted and begin to recognize the ways in which the education of women can well be differentiated from that of men? It is time to realize that the finest family relations result from the association of a man and a woman who have had much of their education in common, but each of whom has developed according to his or her own nature, and not in imitation of the other.

3. *Preparation for Home and Family life.*—Wise education for a woman will not leave her preparation for home and family to the bitter and wasteful school of experience. Her education as a woman should include practical "laboratory" experience in the care of a home and family. Equipment for a girl's education might well include :

1. A baby home.
2. A nursery school, which incidentally would relieve nearby mothers during a part of the day.
3. A club for school children and adolescents.
4. A little home for convalescents.
5. A small home for old people.
6. A home setting where students may have experience in home maintenance and operation, and where they may act as hostesses.

A woman should learn something of problems that are certain to come up in all marriages, and in the relations of parents and children, and how they may be met. Her education should make her familiar with problems of home management and skilled in meeting them, so that she may take her place in a home with the same interest and the same sense of competence that a well trained man has in working at his calling.

To make such a suggestion for women's education is to emphasize the fact that there has been inadequate study of that field in India, inadequate training of teachers for women's education, and inadequate provision for full education for women in our colleges and universities ; though some institutions, such as the Women's Christian College and Queen Mary's College for Women, both at Madras, and the Isabella Thoburn College at Lucknow, are doing pioneering work to that end. These needs have been recognized in

previous educational surveys, in which considerable attention has been given to women's education. There is need that the theory of equality of opportunity, but not necessarily identity of opportunity, shall find increasing expression in practice.

The greatest profession of women is, and probably will continue to be, that of home maker. Yet her world should not be limited to that one relationship. There are varied conditions which may properly lead a woman to seek fulfilment of her life in other fields. Among the great contributors to human welfare have been some men who determined to forego home and family in order to commit themselves wholly to the chosen work of their lives. Women should have this same opportunity. The place of wife and mother offers opportunity for exercise of the highest qualities and skills, yet for a woman to decide that she can best fulfil her aims by living a single life should not put her under a social disability. Sometimes, also, there is a period before marriage during which a young woman can do useful work, such as teaching or nursing. Sometimes the loss of a husband makes her the bread winner for the family. When children are grown, there often remain ten to twenty-five years of vigorous life in which a woman may wish to have a useful career. Sometimes husband and wife wish to share a common occupation through the years. Sometimes with women, as with men, the needs of home and family leave time for useful and interesting occupations. For all such circumstances educational opportunities should be available.

One of the desirable developments of Indian life and education for both men and women is a great increase in the kinds of work open to them. If only a few callings are recognized there is excessive competition for the available places, many kinds of ability find no opportunity for expression, and many kinds of needs remain unsupplied. A wholesome and interesting society will have many and varied occupations and professions. The educational system at all levels should prepare men and women for such varied callings.

II.—Special Courses.

Descriptions of some fields of work peculiarly appropriate to women will indicate directions which women's education might well take in Indian colleges and universities.

4. *Home Economics.*—It is unfortunate that courses in home economics and home management are held in low repute and are shunned by women students, who insist on the same courses as men. We are informed that in one of our most progressive universities where special provision was made for courses in home economics no women students have chosen to take them. There are several

reasons for this bias. Women cannot yet take for granted their equality with men, and feel that they need to prove it by being identical in their studies. Also, certain class consciousness and snobbery still remain. There has been little vocational guidance to help girl students to understand and appreciate the nature and opportunities of a woman's world and to prepare for it.

A mastery of home economics is useful both to the home keeper and to the woman who, from choice or necessity, is to practise a profession outside the home. According to one of the best schools in this field, " Courses in Home Economics deal with the effective feeding and clothing of the family and others : the care and guidance of children ; the family relationships ; the growth of artistic sense and taste which brings beauty into the home ; the organization and running of the home on a sound economic, social and hygienic basis ; and the care and use of equipment ".

The effective organization and management of a well-to-do home is a highly skilled calling. In the old days, in families at all social levels, with traditions of excellence, this art with all its skill and refinement was passed from mother to daughters through the generations. A home economics course should preserve and transmit the best of those ancient arts, with such additions and improvements as modern science and research have made possible, and make them the possession of many.

A well-ordered home helps to make well-ordered men. Many a competent manager of business or of public affairs has become so in part because as a boy he lived in a home that was intelligently and efficiently managed by his mother. Order and efficiency thus became second nature to him. It is doubtful whether many men ever achieve orderly and efficient living whose early home environment was one of confusion and disorder. Probably there would be no quicker way to raise the general standard of economy and efficiency in Indian life than to make women interested and competent in the efficient, economical and convenient planning and management of their homes. A spirit of pioneering, of experiment and research in the planning and management of even a simple home, can add variety and zest to living, as well as economy and convenience, and can stimulate originality and resourcefulness in the children of the home. Thus good home management is more than a convenience for the housewife and her family ; it is the foundation of the orderly state, and the teaching of good home management is the first lesson in good government, as Confucius said.

For the management of the private home, the entire field of home economics is an undivided unit. As an occupation for earning

one's living, however, further specialization is frequently necessary. Occupations within the general field of home economics include Child Development, Family Relations, Food and Nutrition, Home Economics, Education, Housing and Design, Institution Management, and Textiles and Clothing.

A well designed course in Home Economics will include first, the elements of a general education, except as they have already been acquired in secondary schools, as described under General Education in the chapter on Courses of Study ; second, some " core courses " which are desirable for everyone in the field ; and third, more specialized courses as needed or desired by the individual student.[1]

The field of Home Economics is frequently looked upon as solely for women. The ultimate aim of the home economics curriculum is to help women and men to see the true dignity of home making, and to give it an ideal worth. This is the need for men as well as for women. Especially in Institutional Management men share the field with women. Courses in this field generally include administration, financial budgeting, food in quantity, equipment and labour management.

There is room for a large extension of Home Economics teaching in Indian higher education. It should rank in dignity and worth with any other calling.

5. *Nursing*.—In Europe and America nursing is an honoured profession for women, and it would be to the interest of our country if it should have the same standing here. The widespread Western systems of clinics, hospitals and health centres could not be operated without their help. India is much in need of a large expansion of nursing service, both in city hospitals and for rural field service. Nursing education for women should be developed as quickly as is possible with the maintenance of good standards.

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[1] The New York State College of Home Economics at Cornell University, Ithaca, New York, perhaps the foremost institution of its kind in America, has the following " core courses " required for all students in home economics : " The Individual and his Relations with Others "; " Household Processes " (study of the processes and equipment involved in the care of the home) ; " Economic Conditions in Relation to the Welfare of Families " ; " Management in Homes " ; " Elementary Food and Nutrition " ; " Home Furnishings " ; and " Clothing Selection, Purchase and Care ".

The School of Home Economics of Michigan State College has a " core curriculum " of courses required of all students in Home Economics, as follows : (1) On Encouragement of Continuous Intellectual Growth in Members of the Family ; (2) Aesthetics in the Home ; (3) Social and Psychological Aspects of Family Life ; (4) Economic Aspects of Family Life ; (5) Family Health ; and (6) Household Technology.

Even in the wealthiest and most highly industrialized countries there are not nearly enough professionally trained nurses to care for all those who are ill. Their work is supplemented by that of "practical" nurses who have had shorter periods of training. The same needs exist in India. Professionally trained nurses in hospitals will act as surgeons' and physicians' assistants, will handle difficult cases, will supervise village health workers, and will teach nursing. Much of the actual care of patients will be in the hands of "practical" nurses with but limited school training. For diploma grade nurses the required course may well be two years after ten years of schooling.

To become professional nurses, students should begin their training after high school, should do work equivalent to that required for the B.Sc. degree, and should receive the degree of B.Sc. in Nursing. Their studies should include general education, as described in the chapter on Courses of Study, together with courses in physical and biological science as preparation for the specialized courses of nursing education. The nursing courses should be combined with actual practice at caring for the sick. The duration of the course should be the same as that required for the B.Sc. degree.

Expansion of nursing education should take place as fast as buildings and equipment can be made available, competent teachers can be trained, and suitable girl students are available. In few professional fields in India does the need exceed the supply as it does here.

6. *Teaching.*—For the earlier years of schooling, women are the natural teachers, and for all the later stages of education they have their place. With the expansion of education in democratic India the call for well-educated and well-trained teachers for elementary and secondary schooling will probably long exceed the supply. Especially for the teacher's calling, it is important that education shall not be limited to narrow specialization, but that well proportioned general education shall provide a broad foundation for special interests.

7. *The Fine Arts.*—Before completing his or her general education every student is expected to acquire some measure of appreciation of the fine arts. To a steadily increasing extent women will find vocational opportunities in the arts. The teaching of vocal and instrumental music in schools and colleges will provide some such opportunities. The furnishing of music as entertainment will increase. In a democratic country with generally distributed economic resources the number of people who will use the services of entertainers will be far greater than in a society where wealth and opportunity are largely concentrated. Along with men, women will excel in dramatics, painting, illustration, ceramics, and in textile design and craftsmanship.

There are few callings in which women will have a complete monopoly, and few that will be closed to them. In some callings, such as engineering or mining, only rarely will a woman be found. In others such as nursery school management men will rarely appear. Some callings are chiefly in the hands of men, some chiefly in the hands of women, and others about equally shared. This is as it should be.

Sometimes the dominance of men or of women in a calling is chiefly a matter of habit. For instance, in America nearly all elementary school teachers are women, while in this country they are mostly men. For many callings the same courses are suitable for men and women, and separate facilities are not necessary.

Thus, to a considerable degree the problem of occupational training for women is a part of the educational problem in general. There is needed, however, a fuller recognition of the equal status of women and equal opportunity, both for general education and for their life work. The home maker needs training for her work as well as does the engineer or the lawyer.

IV.—The Future of Women's Education

8. *Present Conditions in Women's Education.*—In our visits to many colleges we have had numerous opportunities to inquire into and to observe the conditions and workings of women's education. It is very clear that there are certain steps which urgently need to be taken to make the conditions of women's education more tolerable.

There are few truly co-educational colleges in our country. Rather, there are men's colleges to which women have been admitted as students, which is a very different matter. Quite frequently in "co-educational" colleges nearly all the amenities are for men, and women are little more than tolerated. Often sanitary facilities for women are totally inadequate, and sometimes wholly lacking. Recreation space and facilities for women similarly are inadequate or lacking. One of the most frequent suggestions made to us was that where women and men attend colleges, that a physical directress for women be provided.

In many co-educational colleges women have little or no share, in college life. Women's hostels usually accommodate but few women. and sometimes none at all. According to the comments received, in one city where there are few or no hostels some women students must leave home at 5 A.M. in order to attend classes, and no provisions for refreshments are provided, although the students do not finish their work until mid-afternoon. The commission received comments to the effect that the attitudes of men students left much to be desired.

Other weaknesses of "co-educational" colleges reported to our commission are that there are too few women teachers, and that examinations are a severe nervous strain to women.

9. *Suggestions for Improvement.*—Among the many suggestions received are that women in seclusion should be allowed to appear for examinations; that special consideration be given to the status and needs of women; that in the employment of women staff members, there should be equal pay for equal work as compared with men.

We were informed that while a considerable number of women take medical courses, relatively few actually practise medicine. Since medical education is very expensive, and student enrolment in medical schools necessarily small, to train a person who will not practise is a social loss. To the extent that is the case, women's interests might well be redirected to nursing, medical laboratory technology, dietetics, and other callings where the period of training and the expenses are less. Social taboos are a large element in retarding such redirection of interest. Here as elsewhere, a democratic spirit does not necessarily follow a democratic constitution. Such redirection of interest should be a matter of counsel and advice, rather than of compulsion. The medical profession should remain open to women.

10. *Co-education.*—The question of the wisdom of co-education was frequently raised, and the most divergent opinions were expressed. There seems to be a definite preponderance of opinion that from the thirteenth or fourteenth year of age until about the eighteenth, separate schools for boys and girls are desirable. Whether this opinion is chiefly based on custom or upon experience is not wholly clear.

One of India's prominent educators states: "The modern trend is for equality of opportunity for women in all spheres, and it cannot be arrested. There should be no distinctions of any kind of women from men, after the matriculation stage".

On the other hand many, probably a majority of those who commented, favour separate colleges for women when that is feasible, though not to the extent of denying women educational opportunity by excluding them from existing colleges organised primarily for men.

Some of the arguments given are that a woman cannot develop her personality in a men's college: that there is no need for women to undergo the nervous strain of examinations: that women's education should be more in keeping with the temperament and needs of

women as wives and mothers : and that overcrowding is more serious for women than for men. "A pleasing feature of colleges for women has been the intimate relations of students and teachers." Some of these arguments have greater weight in the absence of truly co-educational colleges where the needs of men and women would be given equal weight in designing the programme.

As the age of entry to degree colleges would, on our recommendation, be approximately eighteen, college education may be co-educational, as it is at present in many medical colleges. Separate institutions at this level would demand unjustified increase in expense. To maintain separate institutions for men and women side by side, duplicating equipment, even when it is very inadequate, would be an undue tax upon limited financial resources. Separate women's colleges commonly have poorer buildings, poorer equipment, and less able teachers. So far as possible co-educational institutions should be encouraged at the degree level.

11. *Appraisals of Women's Education.*—The results of women's education under existing conditions have not been entirely satisfactory. The principal of a college wrote : " Women's present education is entirely irrelevant to the life they have to lead. It is not only a waste, but often a definite disability." Another wrote, " The present system of women's education, based as it is upon man's needs, does not in any way make them fit for coping with the practical problems of daily life. Their education should give them a practical bias, especially from the point of view of families, for making them good mothers, teachers, doctors and nurses ".

One experienced woman educator wrote to the commission : " The modern educated Indian woman is neither happy nor contented nor socially useful. She is a misfit in life. She is highly suppressed, and needs opportunities for self-expression. The new education must provide this opportunity."

To some extent this maladjustment is the price of pioneering. The educated woman is ahead of her time. She is lonely and " out of place " while creating a new social atmosphere in which her daughters or grand daughters can be natural and at home. But to some extent her discontent is due to her effort, not only to be equal to men, but to be like them in all her interests and activities.

One educator wrote : " It is too late in the day to suggest that women should not have the same courses as men. The remaining question is, what additional opportunities shall be provided ? "

It is the duty of those in charge of women's education to face these problems, and to design education for women which will enable them to have full and adequate lives. One educator wrote : "There has been no planning of women's education. It has just happened".

12. *Recommendations.*—1. that the ordinary amenities and decencies of life should be provided for women in colleges originally planned for men, but to which women are being admitted in increasing numbers ;

2. that there should be no curtailment in educational opportunites for women, but rather a great increase ;

3. that there should be intelligent educational guidance, by qualified men and women, to help women to get a clearer view of their real educational interests, to the end that they shall not try to imitate men, but shall desire as good education as women as men get as men. Women's and men's education should have many elements in common, but should not in general be identical in all respects, as is usually the case today ;

4. that women students in general should be helped to see their normal places in a normal society, both as citizens and as women, and to prepare for it, and college programmes should be so designed that it will be possible for them to do so ;

5. that through educational counsel and by example the prevailing prejudice against study of home economics and home management should be overcome ;

6. that standards of courtesy and social responsibility should be emphasized on the part of men in mixed colleges ;

7. that where new colleges are established to serve both men and women students, they should be truly co-educational institutions, with as much thought and consideration given to the life needs of women as to those of men. Except as such colleges come into existence there are no valid criteria for comparing segregated education with co-education ;

8. that women teachers should be paid the same salaries as men teachers for equal work.

CHAPTER XIII

Constitution and Control

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46. Senate (Court). 47. The Executive Council (Syndicate). 48. The Academic Council. 49. Faculties. 50. Boards of Studies.

(ii) Federative.

51. Senate (Court). 52. The Executive Council (Syndicate). 53. The Academic Council. 54. Faculties. 55. Boards of Studies. 56. Principals' Committee.

(iii) Teaching and Affiliating Universities.

57. Senate (Court). 58. The Executive Council (Syndicate). 59. The Academic Council. 60. Faculties. 61. Boards of Studies. 62. Grants Allocation Committee.

63. Other Committees. 64. The Finance Committee. 65. The Selection Committee or Committees.

VI. 66—Recommendations.

I.—Relation to Provincial and Central Government

1. *Nature of Concurrency.*— In a large country like India, good government is only possible if wide powers are conferred by the constitution upon the Provincial Governments. It is essential that in many matters, including public education, the initiative should rest with the Provinces or States and Unions; so should the administration, and so in many fields of activity should the final responsibility. But in some subjects, apart from those which the Centre retains in its own hands, there is felt to be the need, without impairing local initiative, for a co-ordinating power to be retained by the Centre (a) to ensure that all Provinces, States and Unions act within certain limits or observe certain minimum standards, (b) to ensure that, where different units wish to develop different special activities, a coherent over-all national policy emerges, without glaring examples of unnecessary duplication on the one hand or unfilled gaps on the other, and (c) to enable joint planning by Provinces, States and Unions where this is necessary. Subjects falling into this category are placed on the concurrent list.

2. *Witnesses' opinion.*—Nearly all our witnesses have expressed their opinion as to the proper category for university education, Central, Concurrent or Provincial. A minority, but a minority including some important witnesses, think it should be Central. A very large majority, both of university spokesmen and of public men and women, think it should be Concurrent. Practically the only witnesses who thought it should be Provincial were the representatives of Provincial Governments in one or two Provinces. The significant thing was that *even among the representatives of Provincial Governments* a substantial majority preferred Concurrency.

3. *The need for Concurrency.*—We may say at once that we agree with the majority in thinking that the All-India aspects of university education, the repercussions and interchanges necessary and desirable between universities, and the need for a national guarantee of minimum standards of efficiency, make it impossible for university education to remain a purely Provincial subject. No doubt the simplest way of securing these objects would be to make it a Central subject. But we see two serious objections to this, which on balance seem to outweigh the advantages. First, it would tend to produce a stereotyped uniformity which we by no means desire. On the contrary, we wish to see local initiative and local interest in the creation and development of universities far more general and more enterprising than it has hitherto shown itself. Secondly, it would create an awkward hiatus at a critical

stage in the educational system if the Centre became solely responsible for university education while basic and secondary education were a Provincial responsibility. We consider that the necessary safeguards can be achieved by Concurrency, and we now proceed to state what these safeguards are and the ways in which they can be maintained.

4. *Limits of Controls.*—We are not arguing that Central control should be superimposed on, or substituted for, the existing measure of Provincial control of universities. We have in the preceding chapters indicated many grievous shortcomings in our universities as they exist today and many reforms that must be made. But we do not believe that more control from outside is the way to achieve reform. On the contrary a great many of the present evils arise from the fact that most of our universities have no real autonomy whatever, and have proved incapable of resisting pressure from outside. Universities *should* be sensitive to enlightened public opinion; they should *never* let themselves be bullied or bribed into actions that they know to be educationally unsound or, worse still, motivated by nepotism, faction and corruption. The right public policy is to give a university the best possible constitution, securing among other things of the inclusion, of wisely chosen external members of its governing body, and then to leave it free from interference.

5. The specific points on which the Central Government must concern itself with universities are :

6. A. *Finance.*—As we have repeatedly shown in earlier chapters, our universities are grossly under-financed for the tasks they are attempting. More buildings, more staff, better-paid staff, more scholarships, more facilities for research, more books, more equipment—all these are clamant needs. We see no possibility of the Provinces providing the whole of the necessary expenditure, burdened as they will be with the no less acute needs of extending basic, secondary and technical schools. Generous grants from the Centre must be forthcoming; and these grants the Centre will not, and should not, allocate blindly or mechanically. A Central University Grants Commission working through the Ministry of Education must allocate the sums made available by the Central Government, in accordance with the special needs and merits of each university.

7. B. *Co-ordination of facilities in special subjects.*—Research and advanced teaching in many subjects have become such expensive matters that not all universities can specialise in all fields.

Aero-engineering is one example, naval architecture another. India must have one or two universities where these subjects are studied. But all universities cannot undertake all of them. Even in a universal subject like Physics, though some research must be carried on in the Physics Department of each university, Nuclear Physics research is now so costly that in Great Britain, for example, only six of the seventeen universities are given grants for this purpose. A similar position is found in the United States. Again, new subjects come into vogue (sometimes a transient vogue) and every university is tempted to embark on them, though at the outset the whole national demand for that subject could be met by a single university. The only solution is to give to the University Grants Commission the task of co-ordination, with the sanction of giving or withholding grants.

8. C. *Liaison between Universities and National Research Laboratories, Scientific Surveys, etc.*—The Scientific Surveys and also the State Laboratories which the Central Government has set up or plans to set up will need to keep in touch with the universities. Exchange of information between these institutions and the corresponding departments in universities will be required in order to prevent wasteful duplication of effort; and if the experience of Great Britain repeats itself in India, the institutions will seek to enlist the help of particular research workers or research teams in universities, whom they know to be working on relevant topics, for the solution of particular problems. There must also be two-way recruitment between the institutions and the universities (promising researchers from universities being taken on by the institutions and the institutions serving as one field of good candidates for university chairs and readerships). Recognition of the institutions by all universities as "approved" places of study for higher degrees, and interavailability of pension rights (provident funds) between universities and the institutions will also necessitate careful planning on an All-India basis. Where the institutions are under the Ministry of Education, the University Grants Commission can undertake these negotiations and can secure co-operation by means of grants. Some of the institutions, especially those dealing with Applied Science, are not under the Ministry of Education, but under other Ministries; and if these other Ministries prefer to foster their contacts with universities by means of special grants from their own budgets, there is no objection. But we think it probable that sooner or later these other Ministries will see the advantage of using the University Grants Commission, at any rate, as their recommending agent for the allocation of such grants. In Great Britain, for example, the Ministry

of Agriculture have recently handed over to the University Grants Committee the allocation of grants to university departments of agriculture.

9. D. *Adoption of national policies.*—There are issues in India today in which there is grave and obvious danger of disunion through the provinces acting independently both of each other and of the Centre. Some of these issues vitally affect universities, *e.g.* communal quotas, and the use of national or regional languages. We feel very strongly that the universities, as the main source from which India is bound to draw not only most of its leaders but all its high-grade national officials, must throw their weight on to the side of national unity (which need not mean uniformity). With the central guidance of policy that the University Grants Commission can give them, we are confident that they *will* prove a unifying force in the nation. But unfortunately there is clear evidence that in some universities local control has already led to actions tending to disunion. We have elsewhere stated our views on the medium of instruction. Here it suffices to point out that uncoordinated action by universities, either in exclusive use of a regional language or in premature adoption of the national language, will inevitably cause educational retardation and stimulate division between Province and Province.

10. E. *Minimum standards of efficient administration.*—There are universities in India today, whose administration is unsatisfactory. Even in purely academic matters such as the appointment of examiners and the awarding of degrees their procedures and standards are suspect. The existence of such a state of things is immeasurably damaging to our national prestige. It is clear that under existing conditions it has not been possible to effect much improvement. Later on in this chapter we outline the kind of constitution for a university which affords scope for achieving and maintaining the necessary improvements. In order to secure that all university institutions include, within broad limits, these essential safeguards, we recommend that the Governor-General (President) should again become the Visitor of all universities, as he was till 1937, and that the ratification of university Acts should rest with him.

II.—The University Grants Commission.

11. *The University Grants Committee for the 'Central' Universities*—The University Grants Committee was formed in 1945 to deal solely with the three "Central" Universities, Aligarh, Banaras and Delhi, and consisted of four members. In 1946 and again in 1947 its membership was increased and it was empowered to deal with all universities. Neither the Chairman nor the members are full-time. The members include such prominent people as the Premier of a

Province and the Vice-Chancellors of more than one university, people who may be able to attend an occasional meeting of the Committee but cannot possibly spare the time to familiarize themselves with all the universities requesting their assistance. We say this in no spirit of criticism. The Committee is still a very new body and there has been a good deal of doubt as to the way in which it should exercise its powers and duties. In particular, it has had no funds placed at its disposal by the Government. It has only been able to make recommendations to the Education Ministry which in turn transmits the case to the Finance Ministry ; and in these circumstances the Finance Ministry has, inevitably, required to judge for itself each recommendation for a grant made by the Committee. In spite of these disabilities the work of the U.G.C. has been of considerable value.

12. *Need for changes.*—A Committee or Commission for allocating both recurrent and capital grants to universities from the Centre is so fundamental to our proposals for improving and developing our universities that if it were not in existence we should have had to invent it. We therefore welcome its existence even in its present tentative form. But to serve its full purpose, considerable changes are necessary, in its powers and duties and also in its membership.

13. *It should be an expert body.*—The first and most essential change is that the Committee shall have power to allocate grants within total limits set by the Government, instead of merely recommending their allocation to the Finance Ministry which may or may not agree. In a democratic country, the decision of how much public money can be spent on universities can be made, and ought to be made, only by the Government ; it is a political decision and a part of their yearly budgetary proposals. But once that decision is made, the detailed allocation of the money must be left to an expert body, not merely non-political, but as rigidly protected from political or personal lobbying and pressure as the constitution of the country can make them. Otherwise, if the last word on whether this or that new department or new research laboratory shall be located at X University or Y University rests with any Minister, the way is open for ' pressure-groups ' to exert political influence on what should be a purely educational question. The experience of other countries has proved the need for this separation, between the political body which determines policy and sets financial limits for its execution, and the expert body which alone has the necessary knowledge of detail to carry out the policy wisely, fairly and economically. It goes without saying that the audited accounts of any university receiving money from the University Grants Committee (Commission) must be subject to scrutiny by the Finance Ministry.

14. *Responsibility of Centre for advanced work.*—It is certain that no university responsible for teaching and research in India today can be made even passably efficient without the help of recurrent grants from the Centre in addition to their existing resources. We wish therefore to make it perfectly clear that, while the Government must decide each year what sum to include for university grants in its budget, the sum once granted cannot be reduced in subsequent years without disastrous consequences. Instead of giving a large sum in a good year and cutting it down in a bad year, it would be well for the Government to fix the sum at a figure that they feel confident of being able not merely to maintain but to increase by some small percentage annually for, say, the next ten years. We do not forget that the Provinces (or States) are the principal paymasters of all the universities but three. It is reasonable that the Provinces should retain financial responsibility for courses for a first degree. It is in advanced teaching and research that the All-India aspects of university work become more prominent. We accordingly suggest as a short-term goal that the Government of India should make itself responsible for an over-all total amounting to 50% of the cost of post-graduate and research work. This does not mean that the Government of India should relieve these Provinces of half their present expenditure on such work ; on the contrary it should be a condition of all grants that the Province shall not take advantage of them by reducing its own contribution. But at present advanced work is starved at almost every University, and our proposal is that within the next few years the amount spent on it in the Universities as a whole should be doubled.

15. *The Need for Capital Grants.*—The need for capital grants for building and equipment, if universities are to expand or even to relieve the present dreadful overcrowding, is so obvious that we need not dwell on it. But whereas the essential thing about recurrent grants is that they shall in fact recur, it matters less if capital grants vary from year to year according to the state of national finances. We suggest that the sums put at the disposal of the University Grants Commission for recurrent and capital grants respectively should be kept separate in the budget. We assume that the Commission will be invited to state their case, for both types of grant, when the annual estimates are made. Capital grants will of course be earmarked by the Commission for particular projects. Recurrent grants, even if in the first place the Commission indicates the specific needs which should be met by their assistance, should subsequently be merged in the university's general income, with the sole stipulation that the money must be spent upon advanced teaching and research and not to meet the costs of the first degree.

16. *The Commission and Panels of experts.*—In determining the right size of this Commission we have to balance two factors. On the one hand, the Commission must have frequent first-hand contacts with all the Universities and intelligent knowledge of the work of all faculties and this suggests a large Commission on which all subjects are represented. On the other hand, the members of the Commission must not merely deserve but command the confidence of all universities and of the Government; they must therefore be people of very high reputation both for wisdom and integrity; and this suggests a small body. Our proposal is that the Commission itself should be small, but that it should make up panels of experts in each subject, or group of cognate subjects, who would be available for visiting universities and reporting from time to time at the request of the Commission. Members of these panels would serve in an honorary capacity being paid only their expenses when they visited a university or attended meetings. There is no reason why university professors should not serve on these panels as long as they are not asked to report on their own university; and in some subjects it will be difficult to compile a panel without drawing on professors. Where possible at least half the members of a panel should not be members of university staff. Each panel should have a chairman appointed for a fixed period by the University Grants Commission. The panels and the Commission will be helped to keep in close touch with each other if at least one member of the Commission itself can attend meetings of each panel. Before the Commission's annual approach to the Government (see last paragraph) they should hold a conference with the chairmen of all the subject-panels. The allocation of grants should be made solely by the Commission.

17. *Size and Membership of the Commission.*— We recommend that the Commission should consist of five members, viz., three full-time members appointed by the Government of India, which should also appoint one of the three as chairman, together with the Secretary of the Ministry of Finance and the Secretary of the Ministry of Education. If, however, on account of the size of our country, the varying character of the different institutions and the large number of courses involved, the number may be increased to 7, with 5 non-officials and 2 Secretaries. The Commission will have to take very unpopular decisions from time to time, decisions that are bound to disappoint particular universities and provinces. It is vitally important therefore that the appointed members should be chosen for the qualities mentioned above and for no political, regional or communal reason whatever. It is equally important that their position shall be as secure as is constitutionally possible. We regard their responsibility as similar to that of the Federal Public Service Commission; their position should be similarly safeguarded, and they should be under a similar restriction as to future employment—in this case they

should be debarred from subsequent holding of any university office. They should be appointed for six years but of the first three to be appointed one should retire after two and another after four years, so that subsequent appointments will be "staggered". They should be eligible for re-appointment. As to age of compulsory retirement, we hope that the members of the Committee will be Elder Statesmen of the university world, but they must not become a Council of Ancients. We suggest, as the rule in this matter, that not more than one of the three appointed members should be eligible for re-appointment after reaching the age of 65. Needless to say, a Commission including full-time members will need not merely a Secretary but an office and an office staff adequate for their work.

18. *Balance of Interests.*—While reiterating that no external considerations should be taken into account in appointing these three members, we consider that they will more easily gain the confidence of universities if at least one of the three is a scientist and at least one is, broadly speaking, a humanist. Beyond this, there should be no attempt to consider balance of interests when appointing to the Commission. A small committee cannot cover all fields of study, and it is precisely for this reason that we have recommended the setting up of subject panels whose expert knowledge will be at the disposal of the Commission.

19. *Duties of the Commission.*— We have considered the pros and cons of prescribing additional duties for the Commission besides the allocation of grants, and we have decided against it. But this is far from meaning that the appointed members will have nothing else to do. For one thing, they should visit universities as often as they can, either separately or together with members of one or more of the subject panels. There may soon be thirty or more universities in India, and with all their efforts the three appointed members will not be able to know them all intimately, yet their aim should be that a visit by one of them should not be regarded by the university concerned as a rare, still less as a formidable, event.

20. *Duties continued.*— But there is another function which we think will inevitably accrue to the Commission, that of being always available for consultation and advice. Their power of the purse is bound to make them a very influential body, and on top of that they will soon come to possess more knowledge about the universities, individually and collectively, than anyone in India possesses today. We have encountered in our tour a great deal of timidity as to policy and reforms both in universities themselves and in governmental attitude towards them. Much of this is due to sheer lack of knowledge. Indian universities except in one or two provinces are much more isolated than they are in U.S.A., or Great Britain ; isolation causes inbreeding, and that in turn accentuates the isolation. To have

informal access to advice from an authoritative central body would be great gain to them. University A is thinking of some change in statutes that has been adopted by University B. Can the Commission tell them privately whether it has been a success at B ? University C is a unitary university that has become too big and wants to transform itself from a unitary to a federative type. Can the Commission advise them, in the light of what has been done elsewhere ? University D is making a serious attempt at student self-government, and wants to know where else such attempts have been made, and why some have succeeded and others failed. University E has to find a Vice-Chancellor and has no suitable men on its own staff. University F is in a still worse plight ; having two men about equally suitable and each supported by a party, they have wisely decided to appoint neither. Can the Commission suggest a good man from another University who could come in and restore harmony ? We could multiply examples, but let these suffice. The initiative, in seeking advice, should always come from the universities. If the Commission proffered advice unsought, it would spoil the relationship we wish to see it established with the universities, which is the relation of friendship and not that of the policeman or even the inspector. In the last resort, if a university persists in faction fight at the expense of its proper task, the Commission will be bound to divert the public money with which it is entrusted into more profitable channels. That is inherent in the situation, and the mere knowledge that it is so should be a steadying influence.

III.—*Types of Universities.*

21. *Different types.*—India possesses the following types of Universities :—

(*a*) Unitary teaching universities.
(*b*) Federative teaching universities, of which the sole example is Delhi.

We consider that the circumstances of India make the federative type a suitable aim for many universities. Since it is on the whole an unfamiliar type in India, we deal with it in fairly full detail both in this section and the following two sections of this chapter.

(*c*) Teaching and affiliating universities.

This type varies from universities in which the central teaching core is the predominant part of the university, as at Andhra, to universities wherein the affiliating colleges play the predominant part, and the university's own teaching is limited to one or two departments, as at Bombay or Patna.

(*d*) Purely Affiliating Universities.

22. *Teaching Universities.*—There is scope for both the unitary and the federative types. But there is a limit of size beyond which the unitary type fails to retain the advantages which it is expected to possess, namely, the advantages of a coherent corporate life, in which both the members of the staff and the student body can feel conscious of themselves as a single unit. When this size is reached there is clear gain if the university can transform itself into federative type, *i.e.*, a group of colleges, all of them constituent parts of the university but administered separately. It is difficult to name the exact size beyond which a unitary university should not be allowed to remain a single unit for teaching and other corporate activities, but we suggest that when the number of students reaches 2,500, the University shall either fix that as its limit, or, if further expansion is desired, should proceed to change from a unit to a federation.

23. *Federative Type.*—The nearest approach to the federative idea to be found in most Indian universities today is where a particular subject such as Medicine or Engineering is treated as a separate college, often with its own students in separate hostels. This tends to be what an American university means by colleges as component parts of a university. Our plan, while not ruling out these "faculty colleges" for professional subjects, would more nearly follow the Oxford or Cambridge plan by which students of many subjects are members of the same college, and the college itself teaches numerous subjects, sharing this task with the university itself. For the common subjects of the first degree, certainly in arts and possibly in science, each college should teach its own students. The rarer subjects should be taught either by the university in central departments or (by agreement between the colleges), one college could provide the course in such a subject for students of other colleges as well. The essential thing for the success of the federative plan is that the college teachers must not be a subordinate class. They must as at Oxford and Cambridge, themselves form the bulk of the university's own teaching staff. The typical staff of a university department would therefore be : (*i*) a Professor and perhaps a Reader confining themselves to university classes ; (*ii*) Lecturers who would be both university lecturers and college teachers. No doubt at some universities there will be Research departments with a larger element of whole-time university staff. Work above the first degree level would be done by the university departments and not by the colleges, but the college staff in their capacity as university lecturers, would take a full share in such advanced work. The great advantage of this plan is that there is no likelihood of friction, or divergence in point of standards, between university staff and college staff, since

the two bodies are practically identical. The salaries of such "part-time university lecturers and part-time college teachers" will be paid partly by the university and partly by the college in proportion to the amount of time given to each of the two tasks. This is inevitable and is the Oxford practice, but is undeniably rather complicated. The Durham plan, by which the university and the colleges are under the same ultimate authority and financial control, is much simpler in this respect[1] since the "lecturer plus tutor" derives his whole salary from one source.

24. *Teaching and Affiliating Universities.*—We fully recognise—that the geography of India means that for an indefinite time to come there must be many mufassil colleges, not large or strong enough to be autonomous and therefore needing to be linked with a university centre. At the same time, we are convinced that the right policy for the existing "teaching and affiliating" universities is to strengthen their teaching side as rapidly as possible, until in every case it is the preponderant part. It is surprising to visit a university such as Patna or Utkal, and to contrast the pathetically small entity which is entitled to call itself the university, with the spacious buildings of the adjacent government colleges, which are no part of the university. We deal elsewhere with the future of government colleges in university towns. Here it suffices to re-emphasise the point that a real university, capable of undertaking the task of guiding its affiliated colleges in the proper way, can only exist where there is a strong central core of teaching and research departments, working at a genuine university standard.

25. *Affiliating Universities.*—The purely affiliating type of university, was, originally, the only type to be found in India; and it was, in our opinion, a very unfortunate incident, or accident, that India should have adopted this type from the model of London University just before London University itself abandoned the type. Most Indian Universities have long ceased to belong to the purely affiliating type, though some, including some of the oldest, have not moved nearly far enough in the opposite direction. The purely affiliating university has not been a success. Such a university is hardly more than a machine for conducting examinations. This in itself is a misfortune, since it suggests that examining is a university's main function (a profound delusion and one which has done great harm in India). But, worse than this, such a university cannot even satisfactorily fulfil its task as an examining machine. The real controllers of such a university are the Principals, or a group of the

[1] See section 2 for "Constituent Colleges".

Principals, of the affiliated colleges; and a college entering its students for an external examination naturally desires that as many as possible of them shall pass. A high percentage of passes is a good advertisement, and is likely to attract would-be students. This necessarily vitiates both the procedure for appointing examiners and the standards of the degrees awarded. No check on this progressive deterioration is or can be provided by a central " university conscience " *i.e.*, a public opinion in the university which knows what standards ought to be and which insists on maintaining them out of a jealous regard for the university's prestige ; for in such a university there is no such central core. The centre, so far as there is a centre in these cases is no more in personnel than an honorary Vice-Chancellor and a full-time Registrar. The difficulties of such a situation can easily be imagined. It is putting it mildly to say that these difficulties have not always been overcome. The purely affiliating university is to-day doing more harm to the good name of Indian Universities as a whole than any other single factor, and we urge that this type shall disappear from the Indian landscape at the earliest possible moment.

IV.—Classification of Colleges.

26. *The existing situation.*—At present, apart from the unitary universities, the colleges in general are of two types, (a) Government Colleges, (b) Private Colleges.

(*a*) Government Colleges : In many universities the original nucleus for teaching purposes was a government college ; and often these government colleges are still the strongest single teaching units of their university. Even where such a government college is by far the largest entity of an affiliating university, there is no organic link between it and its university other than the link afforded by the examination machinery.

(*b*) Private Colleges : These are of various types and sizes and locations. They range from the " mammoth " colleges of Calcutta to tiny colleges set-up by private benefactors in small mufassil towns. In the motives behind foundation they range from a real educational altruism, as in the case of the Christian colleges or the colleges of the Deccan Education Society or of the Ramakrishna Mission, down to the most sordid seeking of private profit, as when the virtual proprietor over-crowds his college to the point of grossly unsanitary conditions, pays his staff less than can afford them a bare subsistence and reaps a handsome annual revenue. It is sad to see how some colleges, founded by distinguished men from the best motive, have since deteriorated into mass-production establishments where fee income is the main consideration.

27. *Constituent Colleges.*—But there is another type of college besides government and private colleges which is still rare in India, though it is the rule and not the exception in those British Universities which are not unitary. That is the Constituent college, which is an integral part of the university to which it belongs. At Oxford and Cambridge each college is an independent body, but collectively the colleges provide all the students and almost all the staff of the university. Without the colleges there would be no university. Teaching is shared between the college and the university. The university provides most of the lecture and laboratory courses, the college adds individual tuition. The normal teacher is both a university lecturer and a college tutor. The Oxford and Cambridge colleges are much wealthier and charge much higher fees than any Indian college, but the system is not dependent on wealth. Durham University is neither wealthy nor expensive, yet it follows the same pattern with two differences ; college tuition is less intensive, and the colleges are not independent corporations ; each college has its own governing body, but ultimate financial responsibility lies with the university Council. The Durham plan is more appropriate for Indian conditions in general, *i.e.*, the presumption should be that constituent colleges should be those for whose finances, appointments and administration the university itself is responsible. But we do not wish to rule out the Oxford plan altogether. In Delhi, the one Indian university which is deliberately following the federative plan, the private colleges remain independent. In Madras too, the university has recognised the colleges in the city as 'constituent' colleges, a group which includes both government and private Colleges. But if the Oxford plan is followed, *i.e.*, if the colleges remain independent corporations there must be complete co-operation between the university and the colleges in making appointments to the teaching staff. Mere formal 'recognition' by the university of those whom the college wishes to appoint will not suffice. The holders of all such posts will be partly university lecturers, partly college teachers, and both parties must be satisfied that they are getting the right men for the job.

28. *Future of Constituent Colleges.*—We wish to see a great increase in the number of constituent colleges, whether by new foundation, or by transformation of what are at present affiliated colleges, or by changing an overgrown unitary university into a federative group. We wish to break away from the old, and in our opinion, bad, tradition by which the university dictated policy, chiefly in the shape of syllabuses and examinations, to colleges which were organically outside the university itself. We hold strongly that the proper task for any college ranking at university level is not simply to prepare for an external examination but to take its full part and responsibility

in shaping the whole educational policy of the university to which it belongs. This is so much taken for granted in both the United States and Great Britain and so little appreciated in our country that we find it necessary to emphasise the point. We repeat that affiliated colleges will be necessary in India for a long time to come and we realize that among them are some of the best colleges in India. Yet we feel that the closer association between the university and the colleges which is ensured where the college is "constituent", is a great additional source of strength both to the university and to the colleges.

29. *Government Colleges.*—The historical reason why Government colleges were separate entities, distinct from the universities which examined their students, was the belief current when Indian universities began that a university should not itself undertake teaching. Later on, when this idea was gradually abandoned and the universities began to undertake teaching, the government colleges were in existence as vested interests; at any rate, in some centres there was by that time a certain tension between the Education Departments providing the government colleges, which were integral parts of what was then a foreign government, and the universities which were, at any rate in theory, autonomous and which, from time to time, served as organs of nationalist aspiration and effort. Though this may have been inevitable in the past, the situation has completely changed with the independence of India. Now it will be one and the same government which both subsidises the universities and provides funds for the colleges in question. There is no possible reason for keeping the two institutions apart, in separate compartments, and the strongest of educational reasons for uniting them in one administration. They should become constituent colleges of their universities, and the kind of guarantee of higher standards, compared to many of the private colleges, which could be ensured to a government college by its access to public funds, should from now on be given by the fact that it is a constituent part of the university. It is in fact, in present and future national conditions, a topsy-turvy idea that the government should aim at guaranteeing that conditions in one component of a university should be superior to the conditions of service and standards in the university itself.

30. *Existing Rights.*—There would be strong resistance among the existing staffs of government colleges if our proposal meant that they would lose the advantages of salary and tenure which they have had as servants of a government department and found themselves no better off than the under-paid staffs of many of the private colleges. This must be safeguarded in two ways. First, the rights of salary and

tenure at present held by individuals must be fully maintained ; this does not, of course, mean any right to automatic promotion in university service. But secondly and still more important, the conditions of members of staffs of constituent colleges must be made no less attractive than has previously been the case with the staffs of government colleges.

31. *Service System.*—The system by which government colleges have been staffed by members of the Educational Service will thus automatically come to an end and we need not dwell on its disadvantages. It gave no adequate stimulus for a man to work for promotion by specially distinguished teaching or by original research ; in other words, it was too "safe" a job once a man was established in the service. Its other great drawback was that a man doing good work in a college was liable at any moment to be pulled out, either to another college or to purely administrative work ; no body, therefore, in this service could feel himself committed to an academic career.

32. *Private Colleges.*—While all universities have attempted to lay down conditions which private colleges must satisfy before they are affiliated, it is certain that in recent years many universities have relaxed these conditions, or have been unable to insist upon them. We realize that the great demand for seats in colleges has made it difficult for universities to refuse to affiliate new foundations. None the less, the great increase in the number of these colleges affiliated to a single university, and the very poor conditions under which many of the new colleges have been set up, have helped to bring about the deterioration of university standards in general to which almost all our university witnesses have referred. In the matter of standards the strength of a university is all too likely to be the strength of the weakest link in its chain. As one witness put it, the influx of affiliated colleges has " mufassalized " standards throughout the universities.

33. *Conditions for Affiliation.*—In general the universities have laid down the right kind of conditions for affiliation. The weak point has been that these conditions have not everywhere been insisted upon, nor has the university always taken steps to ensure that the required conditions were maintained, once the college had secured affiliation. We think it essential, however, that universities should in future add two new conditions before a private college receives full affiliation.

(a) No college should be fully affiliated unless it can satisfy the university that it is eligible for grant-in-aid. It cannot be too clearly stated that under present conditions a college cannot possibly make ends meet simply by the fees it charges. Wherever this has been

attempted it has meant intolerable overcrowding and under-payment of staff. There are only two ways by which a private college can remain solvent. Either it must have a very substantial annual income from its own resources or it must receive annual grants of public money, whether these are administered through the university or paid directly by the government, or both. A well endowed college, or a Missionary college, whose staff for religious reasons are working for a nominal salary, may not find it necessary to claim any grant ; but in this case the university must still satisfy itself that conditions in the college are such that the college would be eligible for grant if it chose to claim it. The university with its concern for standards and the government as source of grants must be jointly satisfied that a college deserves affiliation.

In section V of this Chapter we suggest a means by which a committee on which government is represented should allocate grants to affiliated colleges.

(b) No college should be affiliated unless it is able to undertake the *internal* assessment of its own students' work during their degree courses, in the way suggested in our chapter on Examinations.

34. *College Governing Bodies.*—We consider it important that college governing bodies should conform more or less to the normal pattern for the governing bodies of universities as outlined in Section V of this Chapter. A college governing body consisting of 12 to 15 members should include :

(*a*) Representatives of the body from which it draws endowments ;

(*b*) The Principal and other representatives of the teaching staff ;

(*c*) Representative *alumni* of the college ;

(*d*) Representatives of the university ;

(*e*) (If the college receives a direct government grant) representatives of the government ;

(*f*) Representatives of enlightened public opinion to be co-opted by the others.

35. *Limit to Number of Colleges.*—Even under the best circumstances, no universities can properly control conditions in a group of colleges numbering 50 or more ; yet that is what some universities are today attempting to do. The only remedy, and it is one which we commend on its own merits, as well as being a remedy for the excessive number of colleges grouped together, should be for new universities

to be established in towns possessing either one college of adequate strength to stand on its own feet as a university, or a group of such colleges which could form a teaching university of the federative type. Each such university besides its teaching centre should affiliate the colleges in its own neighbourhood, thus reducing the load of affiliated colleges carried by the older universities to-day. Affiliated colleges except those which are well prepared for advanced work as distinct from constituent colleges ought to confine themselves to courses for the first degree, leaving advanced work to the university departments and the staff of the constituent colleges working therein. Few affiliated colleges, isolated from the resources of the university centre can undertake advanced work with hope of real success; for these few there is a *prima facie* case for raising to university rank.

36. *Size of universities.*—Most Indian universities have become too large for efficient working. This is true of some unitary universities as well as of the unwieldy agglomerations of the affiliating, or mainly affiliating, universities. We are not at all afraid of the consequences if a quite considerable number of existing colleges are turned into universities as suggested in the last paragraph. This was done long ago at Allahabad and Lucknow, and it ought to have been done in many other places. An institution should not normally be ranked as a university unless it is capable of doing advanced work in three or four Faculties, but apart from that the criterion should be qualitative and not quantitative. In many countries it has been proved that small universities can do good work in their chosen fields. We must rid ourselves of the idea that when a college becomes a university it necessarily means a great increase in size and expenditure.

37. *Stages of Development.*—In the field of higher education, the normal stages of development for an institution that thrives and expands should be as follows:

The first stage will be that of an affiliated college of its regional university.

The second stage will depend on the geographical position of the college. If the college is near a federative university, it should become a constituent college and reach its final status by doing so. If the college is isolated and yet serves a growing educational need, it should become in due time a small unitary university.

The third stage is reached when the unitary university approaches a total of 2500 students. It should then make the necessary plans for dividing its teaching and residential units and becoming a federation.

V.—Structure of the Universities

38. *Constitution.*—In the following section we indicate the type of constitution for universities which will promote their freedom,

efficiency and progress. We deal separately with the three types of universities, Unitary, Federative and Teaching-and-Affiliating. Except for the fact that the Federative type in its fully developed form is new in India, we do not suggest many radical changes from the existing patterns; nor do we wish to see exact uniformity of constitution even among universities of the same general type. We hope too that new institutions will arise and will strike out new patterns for themselves. We limit ourselves here to the points we consider essential. The suggestion we make with regard to the different types of universities, we hope, will be taken into account when new universities are started, and considered also by the existing universities as soon as conditions allow.

39. *Visitor.*—The Governor-General (or President if the head of the State is to be known by that title) should be the Visitor of all universities in India, as he was till 1937.

40. *Chancellor.*—Present practice varies but in most provincial universities the Governor of the Province is *ex-officio* Chancellor. This arrangement has worked well, especially in Provinces with only one university. Where there are several universities in one province the Governor himself may feel that he cannot give to all of them as much personal contact as is desirable. This is a question which should be settled by each Province (or State) for itself.

41. *Vice-Chancellor.*—Originally the Vice-Chancellorship of an Indian University was regarded as an honorary post to be filled by a prominent man in his leisure time. If he had academic interests, so much the better; but sometimes he had not. A Vice-Chancellor coming in from outside and holding office for two or three years could not become intimately acquainted with the details of administration or with the personnel of the university.

While the universities were solely or mainly "affiliating" this conception of the Vice-Chancellor's office was quite natural, and in fact there was not enough work to justify a full-time appointment. But now the position has changed. There are numerous unitary, teaching universities and most of the "affiliating" universities have added teaching and research to their functions, in some instances on a very large and complex scale. Elsewhere we have strongly urged that the *purely* affiliating university is ineffective and obsolete in conception and should be abolished. It is not surprising therefore that the overwhelming mass of opinion offered to us recommends that all universities should in future have full-time, paid Vice-Chancellors. With that opinion we concur.

42. *Duties of Vice-Chancellor.*—A Vice-Chancellor is the chief academic and executive officer of his university. He presides over the Court (Senate) in the absence of the Chancellor, Syndicate

(Executive Council), Academic Council, and numerous committees including the selection committees for appointment of staff. It is his duty to know the senior members of the staff intimately, and to be known to all members of the staff and students. He must command their confidence both by adequate academic reputation and by strength of personality. He must know his university well enough to be able to foster its points of strength and to foresee possible points of weakness before they become acute. He must be the 'keeper of the university's conscience', both setting the highest standard by example and dealing promptly and firmly with indiscipline or malpractice of any kind. All this he must do and it can be done as constitutional ruler ; he has not, and should not have, autocratic power. Besides this, he must be the chief liaison between his university and the public ; he must keep the university alive to the duties it owes to the public which it serves, and he must win support for the university and understanding of its needs not merely from potential benefactors but from the general public and its elected representatives. Last, he must have the strength of character to resist unflinchingly the many forms of pressure to relax standards of all sorts, which are being applied to universities today.

That is a full-time task and it needs an exceptional man to undertake it.

43. *Selection of the Vice-Chancellor.*—The change from part-time honorary to full time paid Vice-Chancellors necessarily affects both the method of their appointment and their tenure of office. Open canvassing and voting for rival candidates may have been tolerable while the post was not much more than a compliment which the university could bestow, though even so it was undignified and led to the formation of factions. But as a means of securing a man of character and reputation for an arduous and highly-skilled service it is, to put it bluntly, disastrous folly. So far as we know no other country chooses the heads of its universities by such methods.

The deplorable effects on a university when the appointment of its chief officer becomes a prolonged intrigue for power have led many of our witnesses to urge that the task of choosing the Vice-Chancellor should be taken out of the universities' hands and given to an external body like the Public Services Commission. In the State universities, as it is, the Vice-Chancellor is externally appointed. After careful consideration, we reject this idea, feeling in the first place, that a Vice-Chancellor for whose appointment the university is responsible will find it easier to gain the respect and confidence of his colleagues; and secondly, that it is really a part of a university's duty to learn how to choose its own Vice-Chancellor wisely and that

therefore to deprive it of this duty would be a counsel of despair. But we recommend that certain safeguards in the method of choosing the Vice-Chancellor should be laid down by each university in its Statutes :—

(*i*) The Chancellor should appoint the Vice-Chancellor upon the recommendation of the Executive ;

(*ii*) The Executive should send forward one name only to the Chancellor. He can of course refer the name back but cannot initiate the appointment himself ;

(*iii*) The Executive should be charged to maintain strict privacy in their deliberations concerning the appointment. No doubt there may be differences of opinion and actual voting inside the Executive but they must keep this to themselves until they emerge with the name of the man whom they are requesting the Chancellor to appoint. There is of course no objection to their privately approaching the man of their choice to see if he is willing to serve, before they send his name forward to the Chancellor ;

(*iv*) The whole idea of "standing as a candidate" for the Vice-Chancellorship must be suppressed. The Executive must in no way be limited to considering the names of would-be candidates. On the contrary they should regard a man's declared intention of seeking the Vice-Chancellorship as *prima facie* evidence of his unfitness for the post.

We realize that this means a revolutionary change from the procedure now current in many of our universities. But it is a necessary revolution if India is to place this highly important matter on a base comparable with that in other countries whose universities command the greatest respect.

44. *Tenure of Office.*—Practically all our witnesses agree that a full-time, paid Vice-Chancellor needs a longer tenure of office than has been the custom hitherto. He will not be able to play his full part as we have tried to describe it until he has made himself known and trusted both in and outside the university. Many of our witnesses have suggested that he should be appointed for five years and should be eligible for re-election. We feel however that to require or to allow re-election is unwise. We have had deplorable evidence that from the day of his appointment a Vice-Chancellor's every decision is liable to be swayed by his need to secure votes for his re-election, and that he

may refuse to take quite necessary action for fear of consequent unpopularity. Even where this is not the case, the suspicion that it may be the case does almost equal harm. We believe that our proposals will go far towards eliminating the appointment of such weak Vice-Chancellors, but still we think it unfair to subject them to this difficulty. The simplest way of avoiding re-election would be to make his tenure of office indefinite, as in U.S.A, or subject only to the same retiring age as professors, as in the unitary universities of Great Britain. Some of us believe that this is the ideal plan, but yield reluctantly to the opinion of our majority that this involves a more drastic change from present practice than it would be wise to commend. We therefore unanimously recommend that all Vice-Chancellors should be appointed for six years and should not be eligible for re-election.

Naturally, a full-time paid Vice-Chancellor should come under the same arrangements in respect of Provident Fund as other members of the university staff.

45. *Other Authorities.*—In the following paragraphs dealing with Senate (Court), Executive Council (Syndicate), Academic Council, Faculties, and Boards of studies, we show in turn our recommendations for the three types of Universities (*a*) Unitary, (*b*) Federative, (*c*) Teaching and Affiliating.

(*i*) *Unitary*

46. *Senate* (*Court*).—The total number should not exceed 100. Our witnesses are practically unanimous that a body larger than 100 cannot fulfil its proper function. The Senate should be more or less equally divided between internal and external members. The best way for a university to determine the size of its Senate is (*i*) to decide how many members of the staff there are who should be given seats by virtue of their position and (*ii*) to prescribe an approximately equal number of external members.

The heads of all departments and the principals of all colleges should be members of the Senate unless this would result in a larger total than 50. In that case rotation and not election should be used to keep down the number to 50.

External members should be contributed roughly in the following proportions : (where the total of external members is to be less than 50, the numbers in each category should be scaled down accordingly).

(*a*) Alumni Association should elect from among their own members not more than 10

NOTE :—Each university should have an Alumni Association open to all former members of the university who have spent not less than two years in residence and who pay a small annual subscription as their membership fee. American universities have shown what admirable work can be done by the Alumni Associations. Membership of such an association is a better criterion for the vote than the present system of "registered graduates" who tend to register, or to be registered by some body else, simply in order to vote in a particular election. No employee of the university or its colleges should be eligible for election to the Senate from the constituency of the Alumni. Domicile outside India should not deprive Alumni of their votes, but only those domiciled in India should be eligible for election to the Senate.

(*b*) The donors should elect from among their own members not more than 5

NOTE :—The donor even of the largest sum should not have the right as an individual to a seat on the Senate, still less should he have the right to nominate some one else to a seat. Without doubt a conspicuously generous donor and friend of a university would be placed on the Senate, either by the donors or by co-option or as a nominee of the Chancellor. But there is danger, if donations of a certain size, carry with them an automatic seat on the Senate, that the balance of Senate membership may be distorted, or in extreme cases that a group could buy up the control of a university. The sum entitling donors to a vote at some universities has become under present conditions much too small. Only donations of two thousand rupees or more should entitle to a vote for the donor's constituency. Donors of one lakh or more should become Honorary Fellows of the University.

(*c*) Representatives of professions, industry and commerce should be given seats to the number of 12

NOTE :—In this respect universities should vary somewhat according to their localities and special interests. Every university should include representatives of the medical, legal and school teaching professions and of social work, whether urban or rural or both. In provincial universities as far as possible, the professional bodies should elect to these seats. In the "Central" universities it will probably be necessary for the Senate itself to invite these representative members.

(*d*) Public officials. The Director of Public Instruction should always be a member and heads of one or two other departments according to the special interests of the university ; in an urban university the chairman of the municipal board should find a seat. Approximate total from this source 3

(*e*) Nominees of the Chancellor. Not more than 10

NOTE :—The Chancellor will normally be the Governor of the province, and it is through his nominees and not through direct appointment by the local legislature that the element of public opinion should be brought to bear upon the universities.

The Senate itself should have power to coopt additional members upto 10

Total 50

47. *The Executive Council (Syndicate).*—This is the pivotal body in the administration of Indian universities. It is bound to wield considerable power and the right choice of members is therefore highly important. Its size also is important : it must not be too large to work as a business-like committee, yet it must contain elements derived from several sources. This indicates the right size within fairly narrow limits, and we recommend that it should not be less than 15, nor more than 20 in total membership. We also recommend that the Executive should be about evenly divided between internal and external members, but with the balance inclining to the internal side. The rule still in force in some of the older universities that members of the staff of the university must not sit on the Executive should be abolished. It dates from the obsolete "affiliating" conception of a university. To deprive professors of any share in the executive policy of their university is to make an illogical gap between academic and executive affairs, which cannot in fact be so divorced from each other.

The approximate pattern of the Executive should be as follows

Vice-Chancellor (ex-officio)	1
Treasurer (ex-officio)	1
Deans of Faculties (ex-officio)	8

NOTE :—But if there are more than 8 Faculties the Deans of the smaller Faculties should hold seats on the Executive by rotation. If there are less than 8 Faculties Professors who are heads of departments should be elected by the Academic Council to bring the total up to 8.

One member of staff with special responsibility for residential life	1

NOTE :—In some universities there is a single person with chief responsibility for residence ; in others such chief responsibility is shared. In the latter case those sharing the responsibility should hold this seat on the executive in rotation.

Persons elected by the Senate from among their number (University employees will not be eligible for election in this category)	4
One person nominated by the High Court of the Province or State, not necessarily from their own number	1
One person nominated by the Public Service Commission of the Province or State not necessarily from their own number	1
Three persons nominated by the Chancellor	3
Total	20

All except the ex-officio members of the Executive should hold office for three years. As far as possible their retirement should be staggered so as to ensure a measure of continuity from year to year

in the Executive as a whole. The elected members should be eligible to hold office for two periods, but thereafter should not be eligible except after an interval of at least one year.

48. *The Academic Council.*—A few of our witnesses have suggested that the Academic Council is an unnecessary body. We do not agree, since it has at least two functions of great value and importance. (1) It is the only body that can co-ordinate between the Faculties ; and there is a growing trend towards courses, at any rate at the undergraduate level, in which more than one Faculty will be concerned. It may be true that the Science teachers hardly ever intervene when Arts business is before the Academic Council, and *vice-versa*. But it is essential for the ultimate unity and coherence of the university that they should be present and should have the right to intervene.

(2) With an Executive composed as we have recommended there should be a two-way traffic of ideas and information between it and the Academic Council. This will be good for both bodies ; it should help the Academic Council to be practical and not utopian, and it should remind the Executive that neither finance nor politics but education is their true objective.

The Council should be wholly academic in its membership. In size it should not exceed 40. This limit may press hard on one or two of the larger universities. But it is better to keep to this number even if it means rotation of seats among those who at smaller universities would all be ex-officio members. Except where it would cause the limits to be exceeded, the Council should comprise :

(*a*) All Heads of Departments.

(*b*) Ten per cent. of the seats on the Council to be filled by teachers other than Heads of Departments, elected from their own number.

(*c*) Not more than four members co-opted by reason of their specialised knowledge.

Elected and co-opted members should hold office for three years, and their retirement should be staggered. Elected members should be eligible to hold office for two periods but thereafter should not be eligible except after an interval of at least one year.

49. *Faculties.*—Each Faculty should comprise :

(*a*) The Professors and Readers in the subjects assigned to that Faculty by the Academic Council.

(*b*) Not more than half the number in (*a*) consisting of other teachers of the Faculty subjects. These should be appointed to membership of the Faculty by the Academic

Council on the recommendation of the Faculty. They should be eligible to hold office for two periods, but thereafter should not be eligible except after an interval of at least one year.

(c) Not more than three persons co-opted by reason of their specialised knowledge.

The Dean of the Faculty should be elected by the Professors in that Faculty who are heads of departments, from among their own number. He should hold office for two years and should be eligible for re-election for a second term of two years. Thereafter he should not be eligible for re-election if there are other Professors who are heads of departments in the Faculty who have not yet served as Deans.

50. *Boards of Studies.*—There should be a Board of Studies for each Department. It should be an internal body but with power to co-opt one member, from outside the University. The Head of the Department should be the Chairman of the Board, which should comprise the Professors and Readers in the Department and all full-time members of the teaching staff of five years' standing. Members of cognate or related departments may be invited to participate. Junior members of the teaching staff may be invited to attend meetings of the Board, though not as members of it. In small Departments it is desirable that this should be done.

(ii) *Federative*

51. *Senate* (*Court*).—The total number should not exceed 100.

It should be more or less equally divided between internal and external members. The Heads of all Departments and the Principals of constituent colleges should be members, up to a total of 50. If the total would exceed 50, rotation should be used.

External members should be contributed roughly in the following proportions, where the total is to be 50.

(a) The Alumni Associations should elect from among their own members not more than 10

NOTE :— In the Federative university the college and not the university will probably be the nucleus for each branch of the Alumni Association and election should be arranged accordingly by college branches.

(b) Donors should elect from among their own members not more than 5

(c) Representatives of professions, industry and commerce should be given seats to the number of 12

(*d*) Public Officials as for Unitary Universities. Approximate total from this source	3
(*e*) Nominees of the Chancellor	10
(*f*) The Senate itself should have power to co-opt additional members up to	10
Total	50

52. *The Executive Council* (*Syndicate*).—The size of the Executive should be not less than 15 and not more than 20, about evenly divided between internal and external members. Professors should be eligible for seats.

The approximate membership should be as follows :

Vice-Chancellor (ex-officio)	1
Treasurer (ex-officio)	1
Deans of Faculties	7

If there are more than 7 Faculties Deans of the smaller Faculties should hold seats in rotation. If there are less than 7 Faculties professors who are heads of departments should be elected by the Academic Council to bring the total up to 7.

Principals of Constituent Colleges holding office in rotation	2
Persons elected by the Senate (Court) from among their own number	4

NOTE :—University employees must not be eligible for election in this category

One person nominated by the High Court of the Province or State not necessarily from their own number	1
One person nominated by the Public Service Commission of the Province or State not necessarily from among their own members	1
Three persons nominated by the Chancellor	3
Total	20

All except the ex-officio members should hold office for three years. As far as possible their retirement should be staggered so as to ensure a measure of continuity from year to year in the Executive as a whole. The elected members should be eligible to hold office for two periods but thereafter should not be eligible except after an interval of at least one year.

53. *The Academic Council.*—The Academic Council should not exceed 45 in membership. It should be kept to this limit even if it means, in the larger universities, rotation among heads of departments and principals of colleges. Except where it would cause the limit of 45 to be exceeded the Council should comprise (*a*) all heads of departments, (*b*) all principals of constituent colleges, (*c*) 10 per cent. of the seats on the Council to be filled by teachers other than heads of departments, elected from their own number, (*d*) not more than four members co-opted by reason of their specialised knowledge.

Elected and co-opted members should hold office for three years and their retirement should be staggered. The elected members should be eligible to hold office for two periods but thereafter should not be eligible except after an interval of at least one year.

54. *Faculties.*—Each Faculty should comprise :

(*a*) The Professors and Readers in the subjects assigned to that Faculty by the Academic Council.

(*b*) Not more than half the number in (*a*) consisting of other teachers of the Faculty subjects. These should be appointed to membership of the Faculty by the Academic Council on the recommendation of the Faculty. They should be eligible to hold office for two periods, but thereafter should not be eligible except after an interval of at least one year.

(*c*) Not more than three persons co-opted by reason of their specialized knowledge.

The Dean of the Faculty should be elected by the Professors in that Faculty who are heads of departments. He should hold office for two years and should be eligible for re-election for a second term of two years. Thereafter he should not be eligible for re-election if there are other Professors who are heads of departments in the Faculty who have not yet served as Deans.

55. *Boards of Studies.*—There should be a Board of Studies for each Department. It should be an internal body but with power to co-opt one external member. The Head of the Department should be Chairman of the Board, which should comprise the Professors and Readers in the Department and all full-time members of the teaching staff of five years' standing. Members of cognate or related Departments may be invited to participate. Junior members of the teaching staff may be invited to attend meetings of the Board, though not as members of it. In small Departments it is desirable that this should be done.

56. *Principals' Committee.*—The federative type of the university will need a special committee, namely, a standing committee of the principals of the constituent colleges under the chairmanship of the Vice-Chancellor.

(*iii*) *Teaching and affiliating universities*

57. *Senate* (*Court*).—The total number may need to be a little larger than in unitary and federative universities. We suggest a maximum of 120. There should be a two-fold kind of balance (*a*) between academic and non-academic members, (*b*) between university representatives, affiliated college representatives and external members.

A third of the university representatives be members of constituent colleges. Assuming a university with 20 affiliated colleges, and a Senate of maximum size (120), there should be 40 members of the university staff, 40 representing the affiliated colleges, including the principal of each college and representatives of the governing body of each college, and 40 external members contributed as follows :—

(*a*) The Alumni Associations should elect from among their own members not more than	10

Each affiliated college should have its own Alumni Association and the 10 seats for Alumni on the Senate should be rotated between the Alumni of the University itself and those of the affiliated colleges in proportion to their membership.

(*b*) Donors: The Donors should elect from among their own members not more than	5
(*c*) Representatives of Profession, Industry and Commerce	10
(*d*) Public Officials as under Unitary Universities. Approximate total from these sources	3
(*e*) Nominees of the Chancellor not more than	6
(*f*) The Senate itself should have power to co-opt additional members up to	6
Total ..	40

58. *The Executive Council* (*Syndicate*).—The Executive in teaching-and-affiliating university may need to be slightly larger in size owing to the wider range of bodies needing representation. We recommend, however, that a membership of 25 should be the absolute maximum. The balance should be about even between the academic and the non-academic members ; professors should be eligible for seats on the Executive. The representation of the teaching departments of the university and the affiliated colleges

shall be decided by each university, taking into account the relative size and strength of the teaching departments and the size and strength of the affiliated colleges.

The approximate membership should be as follows :

(*a*) Vice-Chancellor (ex-officio) . . .	1
(*b*) Treasurer (ex-officio)	1
(*c*) Deans of Faculties	6

If there are more than 6 Faculties the Deans of the smaller Faculties should hold their seats by rotation. If there are less than 6 Faculties then the Academic Council should elect Professors who are heads of departments to reach a total (together with the Deans) of 6.

(*d*) Principals of affiliated colleges elected from among their own number . . .	4
(*e*) Persons elected by the Senate (Court) from among their own number . .	4

Employees of the university and of the affiliated colleges must be ineligible for election in this category.

(*f*) One person nominated by the High Court of the Province or State, not necessarily from their own number	1
(*g*) One person nominated by the Public Services Commission of the Province or State, not necessarily from their own number .	1
(*h*) Three persons nominated by the Chancellor	3
Total . .	21

All except the ex-officio members of the Executive Council should hold office for three years. As far as possible, their retirement should be staggered so as to ensure a measure of continuity from year to year in the Executive as a whole. The elected members should be eligible to hold office for two periods, but thereafter should not be eligible except after an interval of at least one year.

59. *The Academic Council.*—The Council should not exceed 45 in membership even if this means rotation of seats among those who at smaller universities would all be ex-officio members. Except where it would cause the limit of 45 to be exceeded the Council should comprise

(*a*) all heads of departments,

(*b*) five principals of affiliated colleges elected from among their own number,

(*c*) five university teachers other than heads of departments elected from among their own number,

(*d*) ten teachers of affiliated colleges elected from among their own number,

(*e*) not more than four members co-opted by reason of their specialised knowledge.

Elected and co-opted members should hold office for three years and their retirement should be staggered. Elected members should be eligible to hold office for two periods but thereafter should not be eligible except after an interval of at least one year.

60. *Faculties.*—Each Faculty should comprise (*a*) the Professors in the subjects assigned to that Faculty by the Academic Council, (*b*) not more than ten other university teachers of the Faculty subjects elected from among their own numbers, (*c*) one teacher from each affiliated college which offers teaching in the subjects of the Faculty concerned, (*d*) not more than three persons co-opted by reason of their specialised knowledge.[1]

The university Professors who are heads of departments in each Faculty should elect the Dean from among their own number. He should hold office for two years, and should be eligible for one further term of two years. Thereafter he should not be eligible for re-election if there are other Professors who are heads of departments in the Faculty who have not yet served as Deans.

61. *Boards of Studies.*—There should be a Board of Studies for each department. The head of the university department in each subject should be ex-officio chairman of the Board which should comprise :

(*a*) four university teachers of the subject,

(*b*) five teachers of the subject from the affiliated colleges.

All members except the chairman should be appointed by the Faculty for three years and should not be eligible for reappointment until at least one year has elapsed. The Board should have power to co-opt one external member.

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[1] Elected members should be eligible to hold office for two periods but thereafter should not be eligible except after an interval of at least one year.

62. *Grants Allocation Committee.*—Each province with a teaching-cum-affiliating university (one or more) will need a special committee for the allocation of grants to the teaching section of the university and to the affiliated colleges. This Grants Allocation Committee will be constituted on the lines of the Central Grants Commission, with a whole-time Chairman, two other non-official members and one representative each of the Ministries of Education and Finance. The Chairman and the non-official members are to be men of high integrity, unconnected at present with any university but with vast experience of university teaching and administration. The Committee will need a whole-time Secretary and adequate staff.

The following observations apply to all types of universities.

63. *Other Committees.*—A university may have numerous standing committees, but two are of such importance that we wish to record our recommendations concerning them.

64. *The Finance Committee.*–This should be a standing committee of the Executive, though it need not be limited to members of the Executive. At some universities the Vice-Chancellor, at others the Treasurer, is the chairman of the Finance Committee and we see no necessity for a uniform practice in this matter. There is a widespread tendency, not peculiar to India, for Finance Committees gradually to encroach on the functions of their parent body and to become the determiners of policy. This must be resisted. The Finance Committee is there to ensure, among other things, that the university does not embark on schemes which it cannot afford. It can say : " You must choose between your scheme A and your scheme B, since you cannot afford both. " But it must not make the choice itself. Or it can say : " You can only afford scheme C if you cut the cost by 25% ". But it must not decide what part of the scheme is to be cut out. In other words, it must not make educational decisions. Safety lies in securing a Treasurer who is a skilled financier and who is not, and knows that he is not, an educationist.

65. *The Selection Committee or Committees.*—These may be either a Standing Committee whose membership varies according to the vacancy under consideration, or a series of *ad hoc* committees for each vacancy. But it is of the utmost importance that all vacancies on the permanent teaching staff should be dealt with by a properly constituted committee. It should be a committee of the Executive ; the Vice-Chancellor should be its Chairman, and its other members should be : for a professorship, the Dean of the Faculty and three

external experts, for a readership or lectureship, the Dean of the Faculty, the Head of the Department, and two external experts. The external experts should be appointed by the Executive, or in case of emergency by the Vice-Chancellor. If the Executive does not accept the recommendation of the Selection Committee, the matter should be referred to the Chancellor for his final decision. It is not usual to seek external assistance for filling lectureships : but we feel strongly that it is almost as important to do so as when filling chairs or readerships. No doubt in assessing candidates for a lectureship one must judge more on promise and personal qualities than on original work produced ; but it can be done. It is and must be from the ranks of today's junior lecturers all over India that the professors of twenty years hence will mainly be chosen. A university's aim should be to appoint no body to the permanent staff who does not appear to be of professorial calibre, if his promise is fulfilled.

VI.—Recommendations.

66. We recommend—

(1) that University education be placed on the Concurrent list ;

(2) that the concern of the Central Government with the universities be with regard to finance, co-ordination of facilities in special subjects, adoption of national policies, ensuring minimum standards of efficient administration and liaison between universities and national research laboratories and scientific surveys etc. ;

(3) that for allocating grants to universities a Central Grants Commission be established, its composition and functions to be as indicated ;

(4) that the Grants Commission be helped by panels of experts in different branches ;

(5) that there be no university of the purely affiliating type ;

(6) that government colleges be gradually transformed into constituent colleges of the university ;

(7) that private colleges be recognised only on satisfying the university that—

(*a*) they are eligible for grants-in-aid ; and

(*b*) that they are able to undertake the internal assessment of students' work ;

(8) that college governing bodies be properly constituted (and the number of colleges affiliated to a university be limited).

(9) that the aim of an affiliated college be to develop into a unitary university and later into a federative one ;

(10) that the authorities of the University be as follows :—

(*a*) The Visitor (The Governor-General);

(*b*) the Chancellor (generally the provincial Governor) ;

(*c*) the Vice-Chancellor (a whole time officer appointed according to the methods indicated) ;

(*d*) the Senate (Court) ;

(*e*) the Executive Council (Syndicate) ;

(*f*) the Academic Council ;

(*g*) the Faculties ;

(*h*) the Boards of Studies ;

(*i*) the Finance Committee ; and

(*j*) the Selection Committees.

(11) That a Grants Allocation Committee be constituted for provinces with universities of the teaching and affiliating type.

CHAPTER XIV

Finance

I.—Introductory : Present Financial Position of Universities.

1. *Income and Expenditure in Universities.*—A careful perusal of the budget statements presented by the universities in India reveals the fact that the financial position of most of the universities is far from satisfactory. In most cases, the universities are working on a deficit budget and in all cases, it is seen that the revenue from the different sources is hardly sufficient to meet the average present needs of the universities, and in no case are there sufficient funds either for expansion or for improvement in the many directions needed.

2. *Increased Expenditure.*—It is to be noted that the expenditure in all universities has increased considerably within the last ten years without a proportionate increase in income. The increase in expenditure is due to causes over which the universities have had no control. Briefly stated, conditions during the war and in the post-

War period have brought about certain abnormal increases in expenditure under heads which the universities could not have anticipated prior to the War. In those universities which had substantial endowments or which had capitalised funds, the reduction in interest rates has resulted in a number of institutions suffering serious loss under general endowment income.

While there has thus been a great decrease in the annual income of the universities concerned, there has on the other hand been, as stated above, a very large increase on the expenditure side. The main item of increased expenditure has been on the salaries of teachers and of the administrative staff, necessitated by higher costs of living. In particular, the salaries of the junior teaching staff and of the subordinate administrative staff required to be materially enhanced. This increase was not proportionate to the rise in the cost of living and was given effect to with great difficulty on account of paucity of funds. The Bombay University, for example, notes that the decision of the Government to increase by Rs. 10 the dearness allowance paid to their employees in receipt of salary not exceeding Rs. 250 had the effect of burdening the University finances with an additional recurring expenditure of over Rs. 30,000 per annum. The changes in the grades of lecturers' salaries in some North Indian universities were responsible for a considerable additional recurring expenditure. Travelling allowances have gone up on account of the changes in the system of classes and fares on all the Indian Railways, compelling most universities to pay first class fares where they used to pay second class and expenses on this head may have to go up further on account of Air Travel facilities now available.

3. *Increased Cost and Diminished Income.*—Besides these general increases in expenditure, it is to be noted that considerable increase is also inevitable owing to the increased cost under all items of expenditure in a university. The university publications cost more to-day on account of increased cost of paper ; laboratory equipment has become very much more costly, cost of construction of buildings and hostels has greatly increased while the increased cost of imports and the high rates of examination charges have resulted in increased expenditure under necessary heads.

It is, therefore, not surprising that a scrutiny of the budgets and financial estimates of the different universities in India shows deficit balances in almost every university, the position thus being precarious in some and causing anxiety in almost all. A feature of expansion of university education that has affected the finance

seriously is the starting of a number of new universities within a very short period and the consequent reshaping of existing universities. Reference has been made to the starting of the Poona University and the proposals for the Karnataka and Gujarat Universities. Within the last five years several new universities of an affiliating type have been started : Utkal, Saugor, Gauhati, Rajputana, East Panjab, Kashmir, Poona, Karnataka, Baroda and Gujarat Universities, and there are reports current that more universities are likely to be started. The need and utility of more universities are not questioned, but in a chapter on finance, it is obviously necessary to take note of the financial implications on both the existing universities and the proposed universities. Reference will be made at a later stage in this report to the financial conditions that should be considered as fundamental for the starting of a new university. We are here concerned with the effects of the rise of new universities on the finances of existing universities. So long as universities depend largely upon fee income derived from examinations, the seceding of a large number of colleges and of a corresponding number of examinees consequent upon the establishment of these new universities imposes and has created conditions resulting in an acute financial crisis. These difficulties will be accentuated when our proposals for the transfer of the High School and Intermediate classes from the universities are given effect to and when the university course for the First Degree is lengthened from two years to three years. The first proposal will reduce the income derived from examination and tuition fees and the abolition of the classes will reduce the numbers of only the lowest paid teaching staff. The additional year for the Bachelor's degree will involve the employment of a larger number of teachers on higher salary. Moreover in every new university post-graduate classes have to be started and expensive instruction given to the small number coming to each one of them. Further the research work which must be encouraged in each of these universities entails considerable expenditure. An abstract statement of the financial position as culled from the Budget Estimates of the universities, wherever available, is appended (Appendix N).

II.—Finances of University Colleges and Affiliated Colleges.

4. *Financial Resources of Affiliated Colleges.* (*a*) *Grants.*—In dealing with the finances of universities, it is necessary to take into consideration, the financial condition of the universities and of the affiliated colleges in a university. While the finances of a university are largely drawn from endowments, from examination fees, tuition fees and grants, the affiliated colleges do not generally derive any financial assistance from the university directly. The financial assistance given to affiliated colleges varies from province to province;

in some it amounts to 50 per cent of the salaries of sanctioned posts, but in some provinces no grants are given by the Government to the private colleges. The grant-in-aid code of Provincial Governments which is followed in some provinces is not too liberal and it is not liberally interpreted either. Besides many of the colleges which depend entirely on students' fees, may not only cover all expenses from them but sometimes even make a profit.

The grants to aided colleges are given for :—

(*a*) Buildings,

(*b*) Equipment,

(*c*) Library,

(*d*) Fee concessions, and

(*e*) Teaching staff.

It used to be the practice formerly in some provinces that the building and equipment grant was restricted to 50 per cent of the cost. Recently, Provincial Governments have made radical changes restricting the amount of grant that may be given towards these very necessary purposes. At Delhi, the Government of India is agreeable to the payment of 50 per cent of the net expenses for erecting new buildings for the colleges in the University area. The Madras Government, however, has passed orders restricting the building grant to a maximum of Rs. 75,000 for college buildings. The conditions pertaining to grants for equipment and library are stringent and are not always such as will enable a college to proceed with the urgent requirements with any degree of certainty ; and these grants are also given after completion of the buildings or the purchases required, and managements find it difficult to meet the expenditure in advance of the grants that are likely to be received. The position of the affiliated colleges, therefore, has been causing considerable anxiety both to the managements and to the universities concerned, as the expenditure to be incurred has increased for the same reasons for which expenditure has increased under the different items of university finance.

(*b*) *Endowments*.—Nor can it be said that the colleges have substantial endowments to fall back upon. Even in regard to well-established colleges, the income from endowments has decreased and the income from other sources has dwindled. Taking all these factors into consideration, a method of stabilizing the financial security of colleges has been adopted in the Madras University, whereby the management wishing to start any new colleges had had to furnish an endowment of five lakhs of rupees for a First Grade College

and three lakhs for an Intermediate College, which, under the present fairly low rate of interest, will yield an annual income of Rs. 15,000 for a First Grade and Rs. 9,000 for an Intermediate College. A strict adherence to this condition of affiliation within the last six years in the case of newly started colleges has enabled the University to satisfy itself about the proper running of these colleges, while the managements have been relieved of a great deal of financial embarrassment which they would have had if such a secure income was not available.

It must, however, be stated that in spite of these endowments, neither the new colleges nor the old colleges are in a position to meet the growing demands in regard to salaries and to the other conditions of efficient instruction. The scales of salaries payable to teachers have been separately dealt with in Chapter III[1], but it must be repeated that one of the chief drawbacks in most colleges is that the salaries payable to teachers are inadequate, and it has led to a great deal of discontent among the teaching staff, which must of necessity be reflected on the tone and efficiency of the colleges.

5. *Endowments of Universities.*—It has been stated that the universities derive their income either from endowments or from Government grants apart from the examination fees and tuition fees levied by them. Although a few universities have had large endowments given, it may be said that on the whole the income derived from endowments is by no means adequate to meet the needs of modern universities. Large endowments have been made to a few universities by the founders or by generous donors. The Annamalai University owes its inception to the generosity of the late Rajah Sir Annamalai Chettiar of Chettinad. The Banaras and the Aligarh Universities have had large endowments given by Princes and commoners. The Calcutta University has had endowments given by such eminent persons as P. C. Ray, Rash Behari Ghose and Tarakanath Palit; while Bombay has had large endowments from the Singhania and Tata Trusts besides endowments from several other philanthropic citizens; the University of Nagpur has had a large endowment under the Laxminarayan Trust Fund, and the Madras University has for the first time been given a generous endowment by Dr. Alagappa Chettiar. The new university at Saugor owes its existence to a donation of Rs. 2,000,000 from Sir Hari Singh Gaur which is regarded as a first instalment. It cannot, however, be stated that endowments to universities in this country have flown in the same generous manner in which they have either for the British universities or for the American universities. It has been well said "that a university's general endowment fund is the surest

[1] See pp. 78-79.

foundation upon which to build its independence and stability and that a university with a substantial background of endowment is in fact in a strong position not only as regards its own internal control but as regards new developments which it may consider to be particularly desirable ". While it is hoped that similar endowments may be forthcoming, it is not only the rich who should give such endowments, but all those who have enjoyed the benefits of a university education should likewise realise the duty they owe to universities and should repay them in some form or other. It must, however, be confessed that under present conditions, it would be undue optimism to expect universities to be run on endowments that may be forthcoming.

Even in the British universities endowments were responsible for 14·5 per cent of the total income of the universities in 1935-36, while in 1946-47 it fell to 9·3 per cent. This decrease however is not in the total amount derived from endowments. Whereas the total income of the universities was seven million pounds in 1935-36, it was 13 million pounds in 1946-47.

Exemption from Income-tax.—It has been suggested by some that donations to universities will be encouraged if we have a clause in our Income Tax Laws regarding exemption from taxes to be granted for gifts for educational purposes. These may be on the lines of the American Tax Law which allows for exemption of an amount donated by an individual to a Corporation or Trust Fund organised and operated exclusively for scientific, literary or educational purposes. The same proviso about the maximum amount to be exempted, namely 15 per cent of the tax-payer's net income, may be accepted.[1]

6. *Government Grants for Universities.*—Universities have been receiving grants either from Provincial Governments or from Central Government and in some cases from both. The majority of the universities situated in the provinces have received grants from Provincial Governments. These grants are annual grants and in some cases they are treated as block grants so that a definite income from this source is guaranteed for the university concerned. The Central Government has held itself responsible for grants to three universities : the Banaras University and the Aligarh University which were started as sectional universities, both of these being situated in the United Provinces and the comparatively more recently started University at Delhi in the Delhi Province which is within the direct jurisdiction of the Government of India. Till very recently,

[1] Reference Section 23 taken from a Publication of the Bureau of Internal Revenues, dated 1943.

the Central Government did not give any annual grants for other universities ; within recent years, grants have been given to certain universities for specific objects, largely for technological education, while more recently grants have been given to some universities on ceremonial occasions or to take up new activities.

Small amounts have been given to university departments of research for the furtherance of research programmes by some of the organizations responsible for encouraging research. Thus, university departments of research or research departments in colleges affiliated to universities have received small grants from (a) Indian Research Fund Association, (b) Council of Scientific and Industrial Research, (c) Imperial Council of Agricultural Research (*d*) Department of Scientific Research, and similar bodies.

The Government of India started a few years ago the University Grants Committee. It is understood that the University Grants Committee is mainly concerned with recommending grants to the three universities financed by the Government of India, namely Banaras, Aligarh and Delhi. We learn, however, that it is the intention of the Government of India to expand the activities of the University Grants Committee so as to cover all Indian universities. We have referred to the place of a University Grants Commission in relation to universities in general at another place in this Report (Ch. XIII).

7. *Changed Outlook required.*—From what has been stated above, it will be obvious that if university education is to progress on right lines and if the universities in India are to take their full share in the responsible task of building up the structure of higher education, a changed outlook in regard to the responsibility of the State and the public in the maintenance of these universities is essential. At the present time, the problems connected with university education loom large. The need for the expansion of educational facilities to meet the growing and imperative demand of a large section of the youth of the country, the urgency of opening out many branches of learning which hitherto found no place in a university system of education, the development of the facilities for postgraduate and higher education and the great need to increase and stimulate research in all directions cannot obviously be ignored. Independent India cannot for long look to the more advanced countries for intellectual food and sustenance. The time has come when the Government and the leaders of public opinion must take stock of the situation and enable the universities to function so that they may largely be self-sufficient and self-reliant in all grades of intellectual pursuit.

This does not, however, mean that there should not be free and constant contact with intellectual centres of learning wherever they may be situated, but it is a fundamental necessity to create opportunities for as much of self-sufficiency as possible in all spheres, educational and technological, in their widest bearing. How this can be effected is a task which we shall address ourselves to, and it will be for the Governments and responsible bodies to review the position from time to time.

8. *Expansion of Primary and Secondary Education.*—In a review of the expansion of university education it is neither possible nor desirable to ignore the obvious need for expansion of primary and secondary education. It is unfortunately true that in spite of nearly a century of university education, there has been a very slow advance in the spheres of primary and secondary education, and literacy has not spread to 85 per cent of the population in the different parts of the country. In some quarters this has resulted in criticism of expenditure on university education, and not infrequently the remark has been made that extension of university education will lead to lopsided development so long as education is not broadbased and spread to every corner of the country by expansion of primary and secondary education. It cannot be gainsaid that a proper edifice of university education can be built only if literacy is widespread and primary and secondary education is extended to a very large proportion of the youth of the country, even if it cannot be made universal and compulsory. No one interested in university education can, therefore, afford to ignore the urgent demand for expansion of primary and secondary education, and any amount that may be expended for this purpose by the Government is a legitimate charge on the Government of any country and must be supported by all educationists. The danger, however, lies in the specious argument that till such primary and secondary education has spread all over the country, university education should not be given the financial assistance that is so necessary for its efficiency and sufficiency. It has not been infrequent that leaders of public opinion have in the several legislatures criticized expenditure on university education, little realising that the very basis on which primary and secondary education could be built and expanded must necessarily depend upon expansion simultaneously of university education.[1] We feel obliged to draw the attention of the public and the Government to this primary fact that the two are not contradictory but complementary,

[1]. The trouble is that in India the expenditure on education is much less than what it should be. France spends 12% of her total budget on education, Great Britain 11% and India less than 5%.

and any scheme of finance which will foster the expansion of primary and secondary education should necessarily imply financial help to university education also. This apart, the large part that university education has to play in the industrial and economic development of the country in the furtherance of trade and commerce, in the efficiency of the administrative services and in the wider fields of defence and foreign relations, makes it obvious that no Government can afford to ignore the demands of university education for the welfare and proper government of a country.[1]

III.—Purposes for which Grants are needed.

9. *Grants to British Universities.*—A review of the financial position of universities in Great Britain and in most other European countries would reveal the fact that at present large grants are needed from the Government to enable the universities adequately to perform the functions allotted to them. In May 1948 Sir Stafford Cripps in a message to the *Universities Quarterly* said:—

"The darkness of the economic outlook gives no ground for economy in the sphere of university grants. The universities have a great contribution to make towards national economic recovery. We look to them to continue with unabated vigour the search for new knowledge and the education of increased numbers of young men and women from all classes of the community. For it is on the advances that we make in scientific knowledge and on the energy, initiative, directive capacity and courage of these young graduates that the economic future of the country will largely depend."

Thus, in the year 1948, the Parliament of Great Britain allotted a sum of $12\frac{1}{2}$ millions to the 19 universities in that country, and the Minister in charge went further and stated that if there was a demand for increased grants, he would not hesitate to come forward to the Parliament and ask for such grants in the interests of higher education.

Let us consider the different purposes for which such grants are needed.

10. *Requirements of our Universities and Colleges.*—We have already noted the needs of affiliated colleges many of which have had no grants from the government or only nominal grants since

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[1] We may note the meagre proportion of university students in India (about 1 in 1,400) as compared with U. S. A. (1 in about 70) or Great Britain (1 in about 700). In South Africa there are five universities for a white population of two millions, Canada has thirteen for 9 millions and Australia seven for $5\frac{1}{2}$ millions, while we have 25 for over 300 millions. See Appendix C.

their foundation. These colleges cannot become proper institutions with an academic atmosphere until the government makes them grants to cover half of the salaries of sanctioned posts and one-third of the other expenditure. In our previous chapters we have mentioned the urgent requirements of the universities as regards the provision of laboratories, libraries, workshops etc., and also the equipment. The problem has become particularly acute on account of the larger numbers seeking admission to the universities. Even if our suggestions about diverting the students after the secondary stage to the vocational institutions are carried out, the number at the universities ten years hence will be more than what they are today[1] and the financial difficulties being experienced today will be accentuated especially if the pupil-teacher ratio is to be lowered as it should be.

We have also emphasised in Chapter XI the necessity of having more and better accommodation for students' residences. It has been found difficult during the last few years to get the proper building materials for the construction of educational buildings of any kind. Shortage of materials will no doubt prove a limiting factor to the amount of new buildings which can be undertaken but it is hoped that with Government help in the shape of money as well as the quota of materials the needs of universities will be gradually supplied.

11. *Scholarships and other Awards.*—The funds required for the provision of research personnel and scientific equipment have been referred to more than once and we have also mentioned the need for Scholarships and Fellowships. We may mention in this connection the recommendations of the working party of the Ministry of Education in England. They propose to raise the number of state scholarships from 800 to 2,000 per year, all universities and college awards from 1,200 to 2,000 and of local authorities awards from 4,000 to 7,000. This is for England and Wales alone excluding Scotland. If these recommendations are adopted it will mean that out of the 18,000 expected entrants to English and Welsh universities each year 11,000 would get generous help from public funds. In this country the provision for financial help to deserving students has so far been extremely meagre. In most provinces about 10% of the total enrolment is entitled to exemption from the payment of tuition fees, which means that the student is excused only one-fifth or one-sixth of his total expenditure, and has to make arrangement for the balance. The number awarded government and university

[1] Cf. The Central Advisory Board Report on Educational Development: Chapter on University Education.

scholarships does not generally exceed 1% and even these few are not paid more than a small fraction of their total expenses. In most provinces while the number of students has gone up many times and expenses of living have multiplied, the number and amount of the scholarships remain what they were 20 years ago. In order to remedy the state of things we require a much bigger sum allotted in the university budget for scholarships, fellowships and maintenance grants. As a guide to our course of action we may say the proportion of assisted students in British Universities had increased in 1946-47 to no less than 67·9% as a whole, while at Oxford and Cambridge over 82% of the students today receive financial help. A good few of these are receiving grants under the Further Education and Training Scheme for ex-Members of the Armed Forces, but when these numbers decline it is expected that most of the recommendations of the working party will be put into effect. In 1938-39 out of the total expenditure on British universities approximately 12% was devoted to scholarships, studentships, etc. To this has to be added the awards of the State and the local authorities. The first item alone amounted to nearly a million pounds in 1938-39 : today the total sum being spent on assistance to students is very much higher. Conditions in India are different from those in Great Britain and we may not be able to emulate the British universities but it is essential that no meritorious student should be debarred on account of indigence from pursuing a university course. This will mean as a natural corollary that fees paid by students (Examination and Tuition fees) should not form such a large item in the income of universities[1]. The figures for students' fees given in Appendix N do not include those paid to affiliated and (in some cases) constituent colleges. Hence Appendix N does not give a complete picture of the dependence of the institutions on students' fees. We may contrast with this the fact that in British universities in 1946-47 fees provided only 23·2% of the total income as against 32·5 in 1935-36. If our recommendations are accepted the percentage from fee income will be much lower than what it is today.

12. *Other Requirements.*—Our proposals regarding revised grades for university and college teachers will require a much larger sum than what has been spent so far. The Central Universities have recently been enabled with the help of subsidies from the Government to introduce the Central Advisory Board scales of salaries for the teaching staff. This is welcome, but it has made the position

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1. There is at present some diversity between fees charged by different colleges and universities. Fees should be uniform as far as possible just as teachers' salaries should be uniform.

worse so far as most of the other universities are concerned, as it has led to a feeling of disappointment and uneasiness that some recognition should not have been given to teachers of these institutions. Our proposals regarding a lower student-teacher ratio will also involve considerable additional expenditure and for this too government help will be necessary. For the establishment of new universities we are making proposals in a subsequent chapter. The proposals made in Chapters IV and XI will require the remodelling of our pattern of teaching, extension of the activities of students and steps for their general welfare. All these will mean additional expenditure and each university will have to calculate the amount required for the items of our programme accepted by it. The money required will have to be provided by the state (Central or Provincial) after a proper scrutiny of the calculations. This will involve a general revision of the education budgets of the provinces and the Central Government. In Appendix O we give the figures of total provincial expenditure and those for education. The proposals made in this Report are on the assumption that the acceptance of these will be followed by a substantial increase in the state expenditure on university education, the grant to each university depending on its working of the plans.

13. *Financing of New Universities.*—We have pointed out in Chapter XIII that the old conception of an examining type of university is archaic, and a university, if it is to function properly should have an atmosphere of intellectual stimulus, furthering research and fostering higher studies. In a chapter on Finance it is unnecessary to go into the conditions under which and the objects for which a university should be founded, but there need be little hesitation in stating that a university before it is founded should have adequate buildings, library, laboratories, research facilities and a funded capital for the maintenance of the atmosphere of study and research at the headquarters. If our suggestion regarding the exemption of educational contributions from income-tax is accepted, it may be possible to start new universities with some financial help from industrialists and other philanthropists ; otherwise the State will have to be responsible for the capital grants as well as for the recurring expenses.

IV.—Grants—Central and Provincial.

14. Requirements of Colleges.—From what has been stated in this and preceding chapters it will be obvious that unless substantial grants are made available to universities both from the Centre and the Provinces, the work of the universities will be seriously hampered. If one wanted to generalise one might say that while

under-graduate education should be the concern of the Provinces; post-graduate and research work should be the responsibility of the Centre. But one must not push this generalisation very far. In general, an indication has been given as to the purposes for which such grants may be expected. These purposes include among others the following :—

(1) Building grants for Colleges and University Departments of study ;
(2) Equipment grants ;
(3) Library grants ;
(4) Grants for halls of residence ;
(5) Salaries of Professorial and other teaching staff, including Provident Fund, Pensions etc. ;
(6) Scholarships and Fellowships ;
(7) Travelling Scholarships and Study leave ;
(8) Grants for encouragement of research and post-graduate work, and Technical and Professional education in particular.

15. *Central responsibility for Universities.*—The system of State grants and Federal grants to universities obtains in the United States of America. State grants are given to universities situated within the State or Province, but with a view to meeting all-India needs as well as to bring about uniformity in regard to higher education, it is necessary and desirable that the Central Government should give grants for the various objects mentioned above, taking into consideration such Provincial Grants as may be made available. The Commission is aware that the Central Government has taken the responsibility of maintaining the three universities, Banaras, Aligarh and Delhi, and that a large amount of money has been given by way of grants to meet the needs of these universities. While welcoming and appreciating the grants that have so far been given, the Commission would suggest that even though the grants to other universities are mainly provincial responsibilities they should also be the concern of the Central Government at least so far as post-graduate education and research are concerned. The Commission has noted with appreciation that in certain directions grants have been given by the Government of India in recent years and they hope that there would be a more systematised method of giving these grants on the advice of a responsible body.

16. *Method of making Grants : the University Grants Commission.* —The Government of India have in recent years constituted the

University Grants Committee to advise on grants to be given for the Central Universities. At one time it was proposed that the University Grants Committee established by the Government of India should also be responsible for the grants to be made to other universities. The question of the principles that ought to govern State aid to universities has been dealt with at recent meetings of the Inter-University Board. The Commission's attention has been drawn to the resolution passed by the Sixth Quinquennial Conference on the principles which should govern state aid to universities. The resolution reads as follows :—

"This Conference is of the opinion that the provision of adequate teaching, study and research on a university level is essential to the well being of a modern State. The Government of India and the Provincial Governments have therefore the responsibility of seeing that such provision is made. The Government of India and the Provincial Governments are requested to aid the universities on an increasingly generous scale with grants (both recurring and non-recurring) for carrying out schemes of expanding their present activities and for promoting research in all subjects.

While appreciating the efforts of the Government of India in helping the universities by their policy of making grants available to them through the University Grants Committee, this Conference is of opinion that the University Grants Committee should be reconstituted on the general model of the University Grants Committee of the United Kingdom with a full-time Chairman.

To carry out its duties successfully the University Grants Committee should have an adequate Secretariat of its own so that applications for grants from the universities may be expeditiously dealt with and that it should be empowered to disburse the grants to the universities without the need for further reference to any Department of Government.

This Conference is of opinion that the principles of Grants-in-aid are not applicable to the universities.

While appreciating the policy of the Government of India and the Provincial Governments to assist the growth and expansion of university education by financial grants, this Conference places on record its emphatic opinion that the autonomy and independence of the universities receiving such grants should not in any way be interfered with."

In Chapter XIII we have suggested the method of implementing this resolution and securing the object which the Government of India have in view through constituting the University Grants Commission.

We feel that the autonomy and the independence of universities in general is a matter which should be the concern not merely of the universities but of the Governments and of the public in general. Universities can play a great role only if it is appreciated

both by the public and the Government that they function as autonomous units and are free to develop along well-established standards uncontrolled and uninfluenced by the changing waves of democratic passion. At the same time, it must be emphasised that the autonomy claimed by the universities should be understood as implying a greater amount of self-control and self-discipline and a sincere desire to work for the higher standards of intellectual integrity and morality.

We have referred to the system of Block Grants to universities, and we wish to emphasise the adoption of this system which enables the universities to utilise the Block Grants in the best manner possible. There should be no question of any lapse in any particular year and no question of hurried implementing of somewhat ill-considered schemes to prevent such lapse to the Government. Moreover, plans for the development of university education cannot be drawn up in such a manner as to enable the authorities to give full effect to them within a particular year. We believe that the system that obtains in certain of the universities of Block Grants by Provincial Governments has worked so successfully that we have no hesitation in commending this system to the Central Government and to other Provincial Governments as well. It will, however, be understood that Block Grants are mainly intended for maintenance purposes while additional grants will be available for development schemes which are approved by the University Grants Commission from year to year.

We can only add that most of the recommendations of the University Education Commission will require adequate finance and unless such financial help is made available to the universities, it will be futile to expect anything substantial in regard to the improvement of university education in this country. It is with this hope that the Commission would appeal to the Central Government and Provincial Governments, to make available the necessary grants for this purpose. We realise as a result of our visits, that the University Grants Commission, on the lines suggested, would need to visit the different universities and some of their colleges and to make specific recommendations to the Government of India on the proposals made by such universities for grants from the Centre.

V.—*Financial Implications*

17. *Enrolment and per capita Expenditure.*—In estimating the increased cost which will be involved in the implementation of the recommendations we have made, we have to make it clear that our figures are approximate and not exact. In the absence of complete data from the universities or the Governments, it is not possible

for us to give exact figures. Our estimates must, therefore, be regarded as strictly tentative.

The university enrolment in 1944-45 was 197,000 and the total expenditure on collegiate education,—Intermediate, Degree and Professional, was roughly 6 crores.

This works out an average of a little over Rs. 300 per student.

Taking a few residential universities we find that the per capita expenditure in 1947-48 was Rs. 970 and for a corresponding number of affiliating universities it was Rs. 321, the average working out at Rs. 408. The per capita expenditure on professional education is roughly double that on general education, and the expenses in the Science Faculty are higher than, sometimes as much as double those in the Arts Faculty.

If the Intermediate classes are separated from the University, then in many of the affiliating universities the university enrolment would diminish considerably, while in universities like those of Agra, Lucknow and Allahabad which have only degree classes, the numbers will increase. We may take it that the total increase in these universities, making allowance for the additional classes that will be formed, will be about one-third. The reduction in numbers in universities where the Intermediate classes are now treated as a part of the university course will be about one-third. Even if some universities retain the Intermediate classes in the degree colleges, the financial responsibility for these classes should be separated from that for the other classes. But we are sure that in a year or two the present strength in these universities will be reached.

18. *Teachers' Salaries.*—The increase in expenditure on teachers' salaries will not be uniform in the different universities for the reason that scales of salaries in a university like that of Annamalai are much lower than those which prevail in other universities. The increase in expenditure on the salaries of teachers in many South Indian universities will have to be in a higher proportion than in North Indian universities.

Excepting in the affiliated colleges of the University of Delhi, the teachers' salaries in the affiliated colleges are much lower than those proposed by us. That means the expenditure on salaries in the affiliated colleges will be nearly double of what it is at present.

19. *Libraries.*—The expenditure on libraries and laboratories will also have to be increased if teaching is to become effective. We have suggested about Rs. 40 per student as the normal expenditure to be incurred on libraries. If this recommendation is adopted by all the universities and the affiliated colleges, the expenditure will be, in addition to what is being incurred at present, 4 per cent. of

the total budget. We are not in a position to give precise figures for the laboratory equipment. In many colleges which prepare students for science courses and professional degree, the laboratory and workshop equipment is thoroughly inadequate. Immediate steps will have to be taken to improve the position.

20. *Scholarships.*—Our recommendation with regard to free places and scholarships may roughly work to about 15 per cent. of the total enrolment for free places, and 5 per cent. for scholarships.

These items relate to increases of a recurring character.

21. *Residential Accommodation.*—We have already said that hardly 10 per cent. of the students live in hostels. And if university life is to be real, we should provide for increased hostel accommodation. The expenses here will be of a non-recurring character and for such capital expenditure, the institutions would expect help of about 60 per cent. of the total cost from the Governments in the shape of grants and loans.

We must work up to providing residential accommodation for at least 50 per cent. of our students, *i.e.* for another 100,000 students. If we calculate the cost of building hostels at Rs. 2,500 per student, it will come to Rs. 25,00,00,000 (25 crores). Of this about Rs. 1,000 per student may be expected to be provided for by the institution and the balance of Rs. 1,500 will have to be met by the Government concerned. This building programme may be spread over a period of 5 years.

We estimate that this recurring expenditure and non-recurring expenditure will have to be incurred if proper university education is to be imparted to the existing number of students.

22. *Professional Education.*—We cannot, however, overlook that the numbers for a country like ours, in general and professional education, will go on increasing and we may anticipate a doubling of the numbers in a period of 10 years. The expansion of professional education is an urgent necessity. And even there, if our growing needs are to be met, the number of professional institutions will have to be doubled in a period of 10 years. This may be regarded as a very modest ambition. We have referred to the financial aspects of the development of professional education in Chapter VII. In these new institutions, especially the professional, capital expenditure will be very high. Here again private enterprise cannot be depended upon and the Government will have to provide at least 60 per cent. of the recurring expenditure of these Colleges and 75 per cent. of the capital expenditure.

23. *Annual Expenditure.*—Taking up the annual recurring expenditure of the next 5 years with the total enrolment roughly at

the present figure and the expenses according to the present scale (1947-48) we might expect it to be :—

$$250{,}000 \times 400 = 10 \text{ crores.}$$

Of this amount roughly 60% would be on the salaries of the staff including research fellowships, the balance being divided between the administration, the library, laboratories, examinations, scholarships, etc.

According to our recommendations in regard to salary-scales and a lower pupil-teacher ratio the expenses on this head will have to be increased by approximately 75%. In place of the 6 crores at the present scale, the annual expenditure on salaries will amount to 10½ crores.

If we spend Rs. 40 per head on the library the total annual amount will be one crore.

On scholarships and free places the amount will be :—

				Rs.
Scholarships : 12,500 × 600	..	..	..	75,00,000
Free Places : 37,500 × 250	..	..	..	93,75,000
				1,68,75,000

On research-work in connection with examinations we expect an annual expenditure of 5 lakhs.

The present expenditure on administration in all the universities amounts to one crore of rupees. This may have to be increased by 25% on account of revised scales of salaries for the administrative and subordinate staff and whole-time Vice-Chancellors in all universities. So the expenditure on this head we expect to be annually Rs. 1,25,00,000.

The normal expenditure on examinations will continue to be about the same as before and we may estimate it to be one crore.

On the building programme for residential arrangements the annual expenditure for the next five years is expected to be five crores.

The expenses on laboratories and workshops are more difficult to estimate. We have no data before us to make even approximately accurate calculations. The development plans of each university will, however, be placed before the University Grants Commission and they will allocate the priorities. We hope, however, that two crores should be annually set apart for the next five years to be spent exclusively on laboratory building and equipment and on the fittings and buildings of workshops.

For the next quinquennium the total annual expenditure on these heads will be :—

Teachers' salaries	10,50,00,000
Library	1,00,00,000
Scholarships, etc.	1,68,75,000
Examination research	5,00,000
Administration	1,25,00,000
Hostel Buildings	5,00,00,000
Laboratories and Workshops	2,00,00,000
	21,48,75,000

Of this amount the sum required for hostels, laboratories and workshops (seven crores annually for five years) is to be classed as non-recurring and capital grant and therefore in a different category from the others.

Of this roughly 60% will have to be provided by the Government (Central and Provincial) and this amounts to Rs. 8,69,25,000 recurring and Rs. 4,20,00,000 non-recurring (to be paid annually for five years). The balance will be drawn from students' fees (30%) and endowments etc. (10%).

The total Government contribution will thus have to be about 10 crores more than what is being at present annually spent by the Government on university education.

VI.—Recommendations.

24. We, therefore, recommend :

(1) that the State should recognise its responsibility for the financing of higher education ;

(2) that the aid to private colleges should be for buildings and equipment as also for the recurring expenditure, the latter to be on a uniform basis, say half of the present teachers' salaries and a third of other approved expenditure ;

(3) that steps be taken to amend Income-tax Laws to encourage donations for educational purposes ;

(4) that additional grants be made to colleges and universities in order to enable them to give effect to our recommendations ;

(5) that the Government should contribute an additional annual amount of about ten crores for the development of university education during the next quinquennium[1].

(6) that the University Grants Commission be set up for allocating grants.

[1] Government may have to provide additional funds for Intermediate classes which do not come within our purview.

CHAPTER XV

Banaras, Aligarh and Delhi Universities.

I.—Banaras Hindu University.

II.—Aligarh Muslim University.

III.—Delhi University.

We should like to make it clear that we are primarily concerned with principles of university reform rather than with the detailed applications of these principles to individual universities. Our visits to them were of too short a duration to permit of an exhaustive treatment of their administrative structure and working, programmes of study and research, financial resources and management. An entire book would be needed for each institution if it is to be discussed in detail. In the following account as also in Chapter XVI we refer to the leading features of the different universities so as to provide a concrete basis for the discussion of the general principles suggested in the other chapters.

I.—Banaras Hindu University.

1. *The Establishment of the University.*—In Chapter I we have pointed out how, for nearly 30 years after the Allahabad University was founded, there was no new university. Act XVI of 1915 passed by the Indian Legislative Council brought the Banaras Hindu University into being. Pandit Madan Mohan Malaviya was primarily responsible for the collection of funds and working out the scheme which led to the passing of the bill.

2. *Special Features.*—It was a new development in university organization in India in several ways :—

(*a*) The University is denominational in this that membership of the Court is restricted to Hindus (the word Hindu includes Jains and Sikhs) and religious instruction is to be imparted in Hindu religion only. This instruction might by statute be made compulsory for Hindu students.

(*b*) The University was founded to meet a popular demand; large contributions had been collected from princes and private individuals and thus the University could be more independent than the older ones. Rs. 50,00,000 out of these contributions had to be invested as a permanent endowment and the Government undertook to contribute Rs. 1,00,000 per annum.

(*c*) The head of the administration is not to be ex-officio the Chancellor of the University but the Chancellor is to be elected by the Court. The Vice-Chancellor in the older universities used to be nominated by the government : here he also is to be elected by the Court. The nomination of the Provincial Government is restricted to five members of the Senate but there are provisions for control by the head of the Provincial Government in his capacity as Visitor.

He would have powers of inspection, of annulment of proceedings not in conformity with law, of the final sanction of the Vice-Chancellor's appointment and (except where certain powers are reserved to the Governor-General) of sanction to new or modified Statutes and Regulations. The Governor General is the Lord Rector and the Government of India had emergency powers to issue instructions in case of mismanagement etc.

(*d*) The University was to have no affiliating powers, but its jurisdiction was limited to Banaras and though the admission of Colleges was contemplated they were to be constituent units of the University which through its Senate was to be responsible for the entire organisation of studies.

(*e*) The constitution and functions of the Governing Bodies were different from those of the five existing universities. The latter possessed a Senate composed of teaching and lay elements and these were further organised in Faculties and Syndicates. The Syndicate was the Executive

Committee of the Senate and performed administrative and academic functions. At Banaras administration is vested in a Court which is the supreme body and is mainly composed of donors and their representatives and of persons elected by various bodies including the Senate. The Executive of the Court is a smaller body called the Council, mainly elected by and from the Court (the Senate sending five members as representatives and the Court 25). Academic control in such matters as the courses of study, teaching, examinations and general discipline is vested in the Senate which contains representatives of the Court and includes Principals of Colleges, University Professors and other teachers.

3. *Objects of the University.*—The objects of the University are :—

(*i*) to promote the study of the Hindu Shastras and of Sanskrit literature generally as a means of preserving and popularising for the benefit of the Hindus in particular and of the world at large in general, the best thought and culture of the Hindus and all that was good and great in the ancient civilization of India ;

(*ii*) to promote learning and research generally in arts and science in all branches ;

(*iii*) to advance and diffuse such scientific, technical and professional knowledge, combined with the necessary practical training, as is best calculated to help in promoting indigenous industries and in developing the material resources of the country ; and

(*iv*) to promote the building up of character in youth by making religion and ethics an integral part of education.

4. *The Working of the Act.*—The Act provided for new university authorities like the Court and the Council and new officers in the Pro-Chancellor and the Pro-Vice-Chancellor. An extensive site outside but adjoining the city was acquired and the first Statutes and Regulations passed for starting the work of the University.

The Central Hindu College which was founded in 1898 with the object of imparting religious and moral instruction based on Hinduism side by side with a thorough secular education, was under this Act to be maintained by the University, and the University might found and maintain other colleges at Banaras or admit them to certain privileges of the University.

Some of the provisions of the Act were vigorously criticised. Objections were raised to the amount of control retained by the Government, to the multiplicity of the Governing Bodies and to the composition of the Court.

This Act was amended in 1922 and 1930 but the provisions have remained substantially the same. During these 33 years the University has expanded in every direction and now it has twelve colleges and seven Faculties. These Faculties have between them about 40 departments and nearly 150 subjects of study. Few other universities in India have anything like the comprehensive scope of this university. On 31st March, 1948 there were 5,233 students of whom about 50% were resident in the hostels. The University still retains its Intermediate classes and out of the total number mentioned above, above 25 per cent were in the Intermediate classes. It is instructive to note that though the University is an All-India one, the major part of the students in all colleges excepting those in Agriculture, Engineering, Mining and Metallurgy, Technology and Theology are drawn from the United Provinces. In the Arts College, for example, out of the 598 students in the B. A. classes 429 belong to the United Provinces. About half of the students in the Law College and in the College of Science belong to the same province. In the Professional Colleges each Province has a certain quota but here again the largest number comes from the United Provinces.

5. *Finances.*—The number of students in the University has not changed materially during the last three years. The total enrolment in 1945-46 was 4,536, in 1946-47 it was 5,083 and in 1947-48 it was 5,233. The expenses of the University during this period show substantial variation from year to year. According to the Budget Statement for 1948-49 passed by the Council at its meeting on 28-3-1948 the actual revenue expenditure for 1945-46 was Rs. 20,61,931 ; that for 1946-47 was Rs. 24,84,573 ; the revised budget for 1947-48 was Rs. 33,07,942 ; the budget estimate for 1948-49 Rs 42,09,973. The revenue expenditure has therefore been more than doubled during these four years. The Annual Report for 1947-48 mentions the actual revenue payments as Rs. 29,90,029 which is much less than the revised budget figures. Similarly the revenue income for 1947-48 in the revised budget was estimated at Rs. 28,70,920, but the report mentions the actual receipts as Rs. 30,27,167. We hope therefore that the Budget Estimates for 1948-49 were unduly pessimistic and that the revenue expenditure will be very much less than the estimated one of Rs. 42,09,973 and the deficit nothing like Rs. 20,29,977.

But the budget estimates need some explanation. The actual expenditure on the Central Hindu College (Arts and Commerce) was Rs. 2,18,363 in 1945-46 ; the estimated expenditure for 1948-49 is more than double this amount,—Rs. 4,68,046. The actual expenditure on the College of Science was Rs. 2,41,932 in 1945-46 and it is estimated at Rs. 5,41,382 in 1948-49. The Women's College spent Rs. 33,954 in 1945-46, the Law College Rs. 16,776. In 1948-49 the former is expected to spend Rs. 95,495 and the latter Rs. 29,234. In the Colleges of Engineering and Technology too there is similar increase,—in the former from Rs. 1,92,546 (on educational items) to Rs. 4,78,041 (educational) and in the latter from Rs. 99,908 to Rs. 2,34,110.

As one looks into the details one finds that the increase is mainly on establishment, from Rs. 2,13,080 to Rs. 4, 50,946 in the Central Hindu College ; from Rs. 1,91,486 to Rs. 4,33,738 in the College of Science ; from Rs. 33,264 to Rs. 93,785 in the Women's College ; from Rs. 1,43,971 to about Rs. 3,53,000 in the Engineering College ; from Rs. 72,301 to Rs. 1,81,984 in the College of Technology.

One does not get the full explanation for the rise in estimated expenditure from either the Annual Report or the Budget Statement. The rise in the number of students was not such as to require many new posts nor had the University added many new courses of study. So the explanation for the increased expenditure seems to be mainly in (*a*) the improvement of grades of salaries and (*b*) the promotion of teachers from lower grades to higher ones through the creation of new senior posts. Both of these steps are necessary in most of our universities ; the Central Advisory Board and the Inter-University Board had recommended the first step some years ago but not many universities have so far been able to give effect to these recommendations on account of paucity of funds. The funds (potential and actual) at the disposal of the Banaras Hindu University do not seem to justify the increase in expenditure unless the Government of India or the Government of U. P. comes to the assistance of the University. The endowments which the University possesses are not likely to be substantially increased in the near future on account of the present financial condition of industrialists and princes. When the scales of salaries are improved, care should be taken to see to it that those who get the benefits are properly qualified for them. It was said in some cases that promotions or enhancements of salaries were not made with due care. The present constitution of the Appointments Board does not secure proper selections and needs to be altered in accordance with our recommendations.

The salary scales in the provincial Universities of Allahabad and Lucknow, cannot be a guide to Banaras for they have no Intermediate classes while Banaras has a substantial number of Intermediate students. In 1948 out of 1,708 students in the Central Hindu College 554 were students in the Intermediate classes ; in the College of Science out of 1,194 they numbered 703. Teachers for Intermediate classes are not regarded as University teachers in the rest of the province (except at Aligarh and Banaras). Steps should be taken to separate the Intermediate classes from the University. A separate institution may be established with the two highest classes of the Central Hindu School and the Intermediate classes in Arts, Science and Commerce. This separation of the Intermediate classes will also be of advantage to the University in effecting a reduction of its enrolment which has gone beyond what we contemplate as the maximum for a teaching university.

In order to balance the budget the income of the University has to be increased. It may not be possible to increase the receipts from students' fees as already there are frequent protests against the recent increases. If our recommendations about scholarships, maintenance grants and fellowships are accepted the expenses of the University will be further increased. Therefore the University will have to look to the Governments, Central and Provincial, for increased grants.

6. *The All-India Character of the University.*—To judge the All-India character of the institution we may take the number of students from the different provinces in the various Colleges. In the Central Hindu College out of 1,708 students 1,035 are from the United Provinces and in the College of Science out of 1,209, 574 are from the same province. Out of 240 in the Oriental College 141 are from U.P., 78 out of 140 in the Women's College, 84 out of 121 in the Teacher's Training College, 83 out of 166 in the Law College.[1]

The work done in these colleges is not of a different type from what is being done in the Provincial Universities. The fields of study and the departments of teaching are practically the same as at Allahabad and Lucknow. The four-year Intermediate College will naturally cater mainly to the needs of the city of Banaras and its surroundings. As it will be under the supervision of the University authorities it should be a model Intermediate College. But we do not feel justified in describing the work at any one of the institutions mentioned above as of an All-India character.

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[1] The figures are taken from the Annual Report, 1947-48.

It is however quite different with some of the other institutions like the Engineering College where out of 535 students only 106 are from U.P.,—Engineering students from the Panjab number 64, those from Bengal are 47, and Madras has 65. In the College of Technology U.P. has 69, Madras 63, Bengal 23 and Bombay 47. In the College of Mining and Metallurgy out of 199, 61 are from U.P., 29 from Madras, 18 from Bengal and 13 from the Panjab.

These colleges are moreover doing work of a type which is not duplicated by any other institution in the province or in any of the neighbouring provinces. The University has done pioneer work in Mechanical and Electrical Engineering and in Mining and Metallurgy. It has attempted to combine theoretical with practical training in these branches of technical and professional knowledge, thereby fulfilling one of the main aims with which the University was founded.

The Colleges of Engineering, Technology and Mining (to which one may add Agriculture if it expands its sphere of post-graduate work) have made good their claim to be regarded as All-India institutions and they have to be generously financed by the Central Government. All deficits on these institutions should be met and financial provision made for advanced work and research of which there is little at present. Advanced work in the basic sciences and humanities as well should be the concern of the Central Government which should ensure a higher grant for the University library and for laboratory equipment while providing for an adequate number of research fellowships.

But the Intermediate College, the Central Hindu College, the College of Oriental Learning, the College of Science, the Teachers' Training College and the Women's College should be primarily the responsibility of the Provincial Government. Except the College of Science, the others are not likely to attract a large number of students from outside the province. It is not of much use to expand their activities in fresh fields of study at the under-graduate level. The Provincial Government will have to see to what extent the duplication of the work of the Provincial Universities is necessary at Banaras (and at Aligarh) and apportion responsibilities accordingly. It may perhaps want Banaras to specialise in certain branches like Sanskrit and Hindi, Ancient Indian Culture, co-ordinating this work with what will be done in the other universities of the province. In this connection the Provincial Government will have to examine whether there is any duplication of work in the Government Sanskrit College and in the College of Oriental Learning and, if so, to what extent this duplication is justifiable. It may consider the possi-

bility of combining the resources of the two institutions in a strong Oriental College where the best traditions of orthodox scholarship will be kept alive. The province needs more Medical Colleges. Banaras is one of the centres where a Medical College can be located as the city by itself will supply sufficient clinical material for the College Hospital. The study of Ayurveda can then be correlated with the study of western medicine and the training will then be on stronger foundations and likely to be of greater benefit to the masses.

These remarks about provincial responsibility should not however be misconstrued : we do not want this University to lose its character as an All-India University nor do we want to lessen the financial burden on the Central Government. We only wish to point out that in some subjects and Faculties there should be academic co-ordination with Provincial Universities in order that the money spent on the University may go the longest way. If our recommendations regarding Engineering and Technological education are given effect to and if we have new branches of Engineering studied at this great institution much larger sums of money will have to be provided. Some economy of teaching may be ensured by avoiding duplication of teaching in the same subject in different Colleges. Chemistry, and Elementary Biology, for example, are now being taught in several Colleges, practically the same course being covered everywhere. Co-ordination of teaching would effect economy and increase efficiency. For the courses on general education in the colleges of Engineering, Mining and Technology, the help of teachers in the Central Hindu College will be required. The work for the ordinary B.A. curriculum should therefore be a small item in the University programme. We cannot place the B.Sc. work on entirely the same level. In most provinces for Science courses there are many more candidates than seats. If in the College of Science Banaras has a regular quota for the various provinces as it has in the College of Engineering it will raise this institution from the Provincial level.

7. *The Residential Arrangements of the University.*—The attraction of students from outside the Province leads to the natural corollary of providing more accommodation for resident students. As it is, the pressure on available space in the Hostels is very heavy and even with great congestion the University is able to accommodate a little less than 50% of its enrolment in the residential units. The original ideal of a residential university has been only partially fulfilled and the University should expand and improve its residential facilities according to our recommendations in Chapter XI. This will mean

alteration of the present buildings, addition of new ones and a different system of supervision. The kitchens in particular have to be cleaner and better managed. We emphasise this as these Hostels must be centres of corporate life and should bring together young men from different parts of India to inculcate in them a sense of Indian nationality as opposed to provincial insularity.

8. *Religious Instruction.*—Banaras Hindu University is charged to give religious instruction to Hindu students. Even the new constitution permits it. While therefore the Banaras and Aligarh universities may give religious instruction in Hinduism and Islam respectively to the Hindu and Muslim students who desire to learn it, we hope that they will adopt our recommendations in the Chapter on Religious Education and give to their students instruction in the essential principles of other religions and the unity of all religions.

9. *Changes in Constitution and Structure.*—In order to follow our recommendations in Chapter XIII it will need to change some of its administrative machinery. At present the Court is an unwieldy body and only one meeting can be held annually. Even this one meeting is attended only by a small fraction of the total number of members. The clause about representatives of donors being members has not operated well as sometimes members of the lower staff of the University have been nominated by donors as their representatives. Under our recommendation the Court and the Council will have a different composition. If the former body has 100 members, 50 will be drawn from the Heads of Departments and Principals of Colleges. The other 50 will include representatives of the Alumni Association, of Donors, of Industry and Commerce as also nominees of the Chancellor and Co-opted members. The donors of one lakh of rupees or more will be Honorary Fellows of the University. The Senate and the Syndicate will merge in an Academic Council with the powers and membership recommended in Chapter XIII. The Standing Finance Committee must function as an effective organization for ensuring financial stability. It will have to be differently composed and the members will have to exercise a rigorous supervision of the expenditure. A living organization like the University cannot be allowed to stagnate for want of adequate funds, but it can never have unlimited resources at its disposal. Once the block grant of the University has been fixed after full discussion with the University Grants Commission it will be for the University authorities to see that the money is put to the best use for advancing the academic well-being of the University and for extending the frontiers of knowledge.

10. *Recommendations.*—We, therefore, recommend :—

(1) that the denominational character of the University Court be eliminated and people of all castes and creeds be eligible for membership ; and provision for religious education be made along the lines suggested in Chapter VIII ;

(2) that the composition of the Court and the other University authorities follow our recommendations in Chapter XIII ;

(3) that the All-India character of the University be maintained in all Colleges ;

(4) that where the College caters mainly to the need of one province its requirements be considered along those of other universities of the province ;

(5) that the Intermediate classes be separated and form an independent institution with the two highest classes of the Central Hindu School ;

(6) that efforts be made to combine the College of Oriental Learning and the Government Sanskrit College in a strong institution ;

(7) that more generous block grants be provided for the Colleges of Engineering, Technology, Mining and Metallurgy and Agriculture as also for the Science College and the Central Hindu College after a proper scrutiny of all expenditure ;

(8) that the possibilities of establishing a Medical College be investigated ;

(9) that the courses be remodelled according to our recommendation in Chapters V and VII and provision made for General Education in all Faculties ;

(10) that research work be encouraged in all Faculties through the appointment of the best men as teachers, through better provision of Library and Laboratory facilities and through the award of generous Fellowships ;

(11) that the Standing Finance Committee be composed of men with financial experience who may not necessarily be members of the Council and that it be empowered to exercise rigid supervision of the expenditure.

II.—*Aligarh Muslim University*

11. *Inception of the University.*—The University owes its origin to the Aligarh movement started by Sir Syed Ahmad Khan in the second half of the nineteenth century. The M.A.O. College, Aligarh, was opened as a school in 1875 and developed into a college in 1881. "The original object of some of the supporters was to confine the college to the Mohammedans for whose special benefit educational facilities were to be provided. But so much good-will, sympathy and generosity were displayed by the Hindu nobility and gentry that the Committee declared the college open to Hindu students also especially as the curriculum (beyond religious instruction) pursued in the college suited Hindus and Mohammedans alike"[1]. From 1899 an attempt was made to collect funds for raising the college to the status of a university. The funds were collected and the University should have come into existence in 1915 along with the Hindu University but a section of the Muslim community was dissatisfied with the conditions contained in the Banaras Act, on which that for Aligarh would naturally be modelled. The measure of control retained by the Government and the unitary nature of the University were probably the main causes for the dissatisfaction.

12. *The Act.*—The Act for the establishment of the University was passed by the Indian Legislative Council in 1920 and the following points may be noted in it :—

(*a*) The University is denominational in this that no person other than a Muslim is eligible for membership of the Court which is the supreme governing body of the University. Further the study of Muslim Theology is compulsory for all Muslim students ;

(*b*) The Mohammedan Anglo-Oriental College is merged in the University and its aims and objects are to be continued by the latter ;

(*c*) among these objects one of the most important is the promotion of Oriental and Islamic studies and instruction in Muslim Theology and Religion ;

(*d*) the University is a teaching and residential one with provision for tutorial instruction in the residential Halls. It was further given the power to recognise colleges and schools within the Aligarh district ;

(*e*) the Governor-General as Lord Rector is given the power of appointing a Visiting Board which can inspect the

[1] Letter from Sir Syed Ahmad Khan to the D.P.I., N.W.P. 1881.

University and satisfy itself that the University is working in conformity with the Act, the Statutes and the Ordinances ;

(*f*) the University officers mentioned are the same as at Banaras, but the Pro-Vice-Chancellor's post was abolished later. The main authorities of the University are the Court, the Executive Council and the Academic Council.

13. *The Work of the University from 1922 to 1949.*—The University has had a chequered history. During the first few years of its existence the number went on increasing but there were irregularities in administration and consequent complaints about disregard of the Act, Statutes and Ordinances. A committee appointed under the chairmanship of Sir Ibrahim Rahimtoola noted many of these irregularities and suggested improvements. Efforts were made to give effect to most of these suggestions and by 1945 we find the Vice-Chancellor expressing satisfaction about the condition of the University. During the three years from 1942 to 1945 the number of students increased from 2,641 to 4,399 but there was naturally reduction in the numbers after the partition. Particular emphasis was put on the study of the basic sciences and the increase was mostly pronounced in the Science Faculty; but an analysis of the enrolment in 1947 shows that more than half of the students in the Science Faculty were in the intermediate classes. The position was different in the Arts Faculty where only about 25% were in the two lowest classes.

A special feature of the new developments of the University was the establishment of a Faculty of Engineering which in 1947 had an enrolment of 224 in its degree classes and 83 in the diploma classes. The study of Law has become very popular with 250 students in the department and the Teachers' Training College can make provision for 60 students in the B.T. classes. The study of Agriculture has not so far made much headway. Plans for the establishment of a Medical College have not yet matured though about Rs. 50,00,000 were collected and the plans are in a definite shape.

The main contribution of Aligarh during this quarter of a century has been the building up of its corporate life through well-organized sports and games and through the atmosphere of a residential university. The residential organisation maintains four Halls where social and intellectual activities promote close intercourse between students from different parts of India. The Wardens guide all these activities which bring the students nearer to one another and help the development of a common spirit. A special

feature is that a limited amount of authority and responsibility in these Halls is placed on the students themselves. All discipline inside the hostel is maintained by students' monitors who supervise the kitchen and the common room. This experience in organising corporate life is of help to the students in developing initiative and qualities of leadership.

14. *Finance.*—A comparison of the expenditure during the last few years shows an increase from about 15 lakhs in 1946-47 to Rs. 18,48,000 in 1948-49. This is an increase of about 23% which does not appear to be much but we have to remember that there has been a drop in the number of students and hence the income of the University has decreased. The income which was Rs. 15,20,000 in 1946-47 was Rs. 14,39,000 in 1948-49. The decrease is mainly under the head ' Students' Fees ' where there has been a diminution of over Rs. 40,000. Scrutinising the expenditure in detail we find that the increase in each department has been mainly on the salaries of the staff, though in the Science Departments equipment and apparatus have been responsible for some items.

Inflation has been responsible for some allowances, and the grades recommended by the Central Advisory Board have been introduced in the University. The Central Government has been contributing a sum of about Rs. 2,00,000 for the payment of these allowances and the improvement of grades but during 1947-48 there was a deficit of about Rs. 1,40,000 and during 1948-49 the deficit is expected to exceed to Rs. 3,00,000. The deficit is thus assuming serious proportions and efforts have to be made to balance the budget immediately. We do not expect that there will be an increase of income from endowments or donations and we believe that the University will have to depend primarily on grants from the Central or the Provincial Government.

15. *The All-India Character of the University.*—In judging its claim on the Central Government we have to follow the same considerations as we did with regard to Banaras. Before the partition the number of students from provinces other than U. P. was much larger than what it is today, but the present drop is perhaps a temporary phase. Even the Faculty of Arts used to attract a considerable number of students not only from Bengal, the Panjab and the N. W. F. P. but also from Madras and Bombay. The influx of students from the areas now in Pakistan is necessarily stopped, but the reputation of Aligarh as a centre of higher education is being revived not only among the Muslim population in India but also among the non-Muslims. The unfortunate incidents of the few years before

the partition caused a set-back in its academic work. But it now appears to have turned the corner and with the guidance of those who are now at the helm of affairs Aligarh should not have great difficulties not only in recapturing its lost position, but in enhancing its usefulness.

Students from outside will have to be particularly attracted to the Faculties of Science and Engineering and we hope that there will be an attempt to have quotas for the various provinces in the matter of admissions to these two Faculties. As to whether the Arts Faculty can regain its old All-India position or not we cannot be sure at present.

16. *Suggested Changes in the Constitution.*—In Chapter XIII we have suggested a pattern for the administration of teaching universities and we hope the authorities of the Aligarh and Banaras Universities will conform to that pattern. This will mean a radical change in the structure of the Court and the Executive Council, but we hope that these will be carried out in the near future. Changes will also have to be made in the composition of other university bodies and in the method of choosing the Vice-Chancellor and we hope it will not be difficult to effect these changes.

17. *Changes in Academic Work.* (*a*) *Arts and Science.*—The main change which is necessary is the removal of the Intermediate classes from the University. We have already noted how in the Science Faculty they overweigh the other classes. We need not repeat the arguments which we have advanced elsewhere (Chapter IV and V) for the establishment of Intermediate Colleges as separate units of teaching. An efficient four-year junior college or a higher secondary school may be established either in the buildings where the Intermediate College was formerly located or in new structures.

(*b*) *Engineering.*—The Engineering College needs to be considerably strengthened. It was started during the War and it has not so far had an opportunity to consolidate its activities. The building in which it is at present housed is quite unsuitable and extensions are urgently required. The equipment too falls far short of what is necessary and there are several vacancies in the senior staff. For some time to come it may not be possible for the college to extend its activities beyond the three branches of Electrical, Mechanical and Civil Engineering, but it has to attempt to make this training as efficient as it is in the older institutions. The sum which is required for the new buildings and equipments is a large one but we hope it will be available as part of a 3-year or 5-year plan. We have not many University Engineering Colleges in the country and those which exist have a special responsibility for not only producing

professional men, but also for providing facilities and an atmosphere for advanced work and research. We have discussed this matter in Chapter VII, and we expect this college to carry out our suggestions.

(c) *Agriculture*.—The College of Agriculture had not advanced beyond the Intermediate stage when it was discontinued. The work used to be done in co-operation with the Science Departments, but the B.Sc. (Ag.) courses could not be started for lack of funds. There is considerable scope for post-graduate work in Agriculture which has not yet been availed of in most of our Agricultural Colleges. If Aligarh has a University College, the ultimate objective should be the building up of departments specializing in certain aspects of Agriculture, Horticulture and Veterinary Science. The proposal to institute the Master's and Doctor's Degrees in Agriculture which will be obtained by students working in the Agricultural Research Institute, Delhi, may await further consideration, but an agricultural college preparing students for the first degree course should be established as soon as possible.

(d) *Medicine*.—There has been a considerable amount of disappointment at the delay in establishing the Medical College. We need many more medical colleges and the collection of a substantial sum of money lends support to the project for a medical college at Aligarh. It will naturally be not a provincial but an all-India college, as the Health Survey and Development Committee suggested and its administration may be either directly in the hands of the Executive Council of the University or of a Board of Governors on which the University, the Central and Provincial Governments will be represented. The funds at present at the disposal of the University will go some way towards the erection of the College and the Hospital but they have to be supplemented by a larger amount to bring the institutions into being. Provision has also to be made for the recurring expenses of the Hospital and the College. As the Government has to plan the starting of institutions in different parts of the country and as at present there is no Medical College for men between Agra and Amritsar, the starting of work for the construction of the College should not be further delayed. The future relationship of the Tibbia College with the new Medical College will have to be investigated and the possibilities of co-operation between the two explored.

(e) *The Library*.—While opportunities have to be provided for Professional Education, work in the Humanities and Pure Science cannot be neglected. Here the most urgent need of the University

is a proper building for the University Library. We have noted in Chapter IV the part played by libraries in university education and in a teaching university. The main centre of intellectual activities is the University Library. The other teaching universities in the Province are fortunate in possessing adequate buildings for housing their books but at Aligarh other schemes of expansion were given priority with the result that now the Library is losing a considerable part of its value on account of inadequate accommodation. We have been told that the teaching blocks are cramped and need expansion but all this must wait until a proper Library building has been constructed. The University authorities in their Memorandum emphasized the need of a Senate Hall and Offices, a building for the College of Commerce and extended residential accommodation, as also for the provision of certain amenities regarding water-supply, sewage disposal, drainage and realignment of roads. The measures for the improvement of drainage and sanitation require immediate attention.

(*f*) *Advanced Work.*—We entirely agree with the point made in the Memorandum on the need for additional Scholarships and Research Fellowships. We have also noted the legitimate desire of the University to offer special facilities for advanced work in some of the Basic Sciences, Mediaeval History and Oriental Classics as also the proposal to give instruction in the modern languages of the Middle East. These are natural developments of the immediate future for which the support of the Government is necessary. Here the Provincial and Central Governments may have to consider the problem of co-ordination with the other Universities of the United Provinces (and perhaps with Delhi) as we suggested about the Banaras Hindu University.

These are pressing needs but they have all to be financed by the Government. We have to repeat what we said about Banaras Hindu University that as the Government has only limited resources it must choose some requirements as more urgent than others and request the University to arrange an order of priority. It may be necessary to have the co-operation of two Ministries of the Central Government (the Ministry of Health for the Medical College and the Ministry of Education for the other institutions) and the Provincial Government (for financing the Hospital attached to the Medical College) before a three-year or a five year plan is chalked out. But we hope that all consultations and discussions will be expedited and the progress of the University properly directed in the immediate future.

18. *Recommendations.*—We recommend :—

(1) that people of all denominations and creeds be eligible for the membership of the Court and that provision for religious education be made along the lines suggested in Chapter VIII ;

(2) that the composition of the Court and other university bodies follow our recommendations in Chapter XIII ;

(3) that the All-India character of the University should be maintained in all Faculties, especially in the Faculty of Science and in the professional institutions ;

(4) that the requirements of the Faculties of Arts and Science may have to be considered along with those of other universities of the province and with those of Delhi University ;

(5) that the Intermediate classes be separated and form an independent institution with the two highest classes of one of the University schools (the choice to depend on the location of this new institution) ;

(6) that more generous block grants be provided for all the Faculties after a proper scrutiny of all expenditure ;

(7) that, in particular, the establishment of the Medical and Agricultural Colleges and the consolidation of the Engineering College be expedited ;

(8) that a Library building be constructed as early as possible ;

(9) that our general recommendations in Chapters IV, V and VII be followed as closely as possible.

III.—Delhi University.

19. *The Establishment of the University.*—The preamble to the Delhi University Bill of 1922 explained that its object was the establishment of a unitary, teaching and residential university at Delhi ; and that the provisions of the Bill generally followed those in the Dacca University Act. Hence one infers that the definition of a College in Section 2 (*a*) and the description of its functions in Section 33 were intended to make of the College a unit of residence where supplementary instruction might be given. The existing colleges would then have been converted into intermediate colleges with all instruction for the degree courses centralised at the University. This position was not acceptable to the colleges and the University did not insist on the execution of its original intentions. Hence a compromise was arrived at and Statutes 34 and 35 recognising the colleges as units of teaching passed in 1936.

20. *The Teaching University.*—The University, housed in the old Viceregal Estate, took up the entire responsibility for the B. Sc. (and later for M.Sc.) and LL.B. courses. The staff remained inadequate and the laboratories insufficient and ill-equipped for some time. Arts teaching was carried on in the colleges by their teachers who were "recognised" by the University, some of them receiving the status of Honorary Readers. The University Library had no proper building and had an annual budget of Rs. 10,000 which small sum was not spent every year for the first ten years.

(*a*) *Buildings.*—The real expansion of the University has been carried out during the last five years in which several buildings have been constructed :—

The University Hall (for post-graduate students), the Jubilee Hall, Miranda House (the University Women's College), the Faculty building (the headquarters of the Arts Faculty), the Law school, the university laboratories, science workshop and residential accommodation for teachers.

(*b*) *Teaching Posts.*—The University has professorships in History, Economics, Mathematics, Physics, Chemistry, Botany and Law, in addition to readerships and lectureships in these and other subjects. Of the university departments the Delhi School of Economics deserves special mention. This school is responsible for post-graduate teaching in Economics and will devote itself to the conduct and promotion of research work on economic problems. The school has received some generous private donations, but is otherwise entirely financed by the University.

(*c*) *The Library.*—The University Library has been re-organised. The hall has been reconditioned and new furniture added. The library staff has been improved and developed. A new scheme of book classification known as "Colon Classification" has been adopted. The method of borrowing has been simplified and the membership of the library has been greatly increased. In 1933 it had only 14,000 volumes and now it has more than 50,000.

21. *Finances.*—The continuous growth of the University has naturally meant increased expenditure. In 1946-47 the total expenditure was Rs. 7,26,359 while in 1948-49 it was Rs. 13,56,900. Every Faculty shows expansion : the Arts Faculty which spent Rs. 59,698 in 1946-47 was expected to spend Rs. 1,20,350 in 1948-49. The Law Faculty expenditure had increased during these two years from Rs. 68,840 to Rs. 1,07,000. In the Science Departments there is not only increased expenditure on the staff but there

is now a special item called the Science Expansion Scheme for which Rs. 82,000 was budgeted in 1948-49. Thanks to the reasonableness of the Government the increase of income has kept pace with the increased expenditure. The Government grant was only Rs. 1,00,000 per annum for the first 20 years of the existence of the University and by 1945 it was increased to Rs. 2,00,000. Now the normal recurring grant is Rs. 3,15,000 but in addition to this special grants are being made every year. For example, in the budget of 1948-49 on the recommendation of the University Grants Committee the University received Rs. 3,64,000. The Science Expansion grant amounts to Rs. 82,000. The non-recurring grant for general administration is Rs. 1,00,000 and the dearness allowance Rs. 90,000. In addition to these, there are grants for the maintenance of buildings and for carrying on special courses in Anthropology, Russian and for a diploma in Tuberculosis. Most of these grants either did not exist or existed in smaller amounts in the budget of 1946-47. The Government of India in making larger increased grants to the University has not interfered with its autonomy. The University in its Memorandum recognises that if the Government provides the greater part of the funds needed for development, Government must be satisfied with the broad lines of the development proposed and that the money is spent to the best advantage.

22. *Future Expansion of the Teaching University : University Proposals.*—The University emphasises the following points in its plans for future development :

(*a*) it will concentrate more particularly on quality over a comparatively small range of subjects than on dissipating its energies over a large field ;

(*b*) for the fostering of research the University seeks to add substantially to the number of the science teachers and wishes to develop specially a school of Physics. It also wishes to specialize in the study of Indian History and Archaeology on the one hand and that of Modern Languages on the other ;

(*c*) it desires to establish new institutions for Technology, Agriculture and Teachers' Training.

A number of new posts is proposed by the University not only in the subjects which are working at present but in new ones like English, Philosophy and Sanskrit. It mentions a generous offer of Rs. 6,00,000 towards the building of a new library and suggests that the annual recurring grant to the library may be increased to at least Rs. 1,00,000. The University requires another Rs. 70,000 a year to give effect to its scheme for the awards of Fellowships and Scholarships on an all-India basis.

23. *The Colleges.*—Of the seven colleges of the University St. Stephen's College has been fortunate in having completed a new set of buildings in the University area with residential accommodation for 156 students in a college of about 350. The Hindu College which is numerically the largest institution has its teaching buildings near Kashmere Gate and some residential quarters on the University site. It had plans for removing the institution to the University campus but on account of various difficulties has not succeeded in doing so. The Ramjas College shifted from its own premises at Anand Parbat to temporary ones in Daryaganj which it is still occupying. The College of Commerce is also located in hired buildings in the same area. The Delhi College has an attractive old building near Ajmere Gate and the Hansraj College is a new institution with very inadequate buildings. The Indraprastha College for Women has a big area not too far from the University but the building is not a suitable one for college purposes.

These colleges between them had an annual grant of Rs. 95,000 for the first twenty years of the existence of the University. This was increased approximately to Rs. 2,50,000, in 1945, but with a number of conditions about the composition of the Governing Body, uniform scales of salary and reasonable security of tenure for teachers. The Governing Body of each of these colleges has not more than 15 members, five of whom consist of the Principal, two representatives of the teaching staff and two nominees of the University. These measures have helped to improve the work of the colleges and the status of teachers.

One main problem confronting the colleges is that of shifting to the University campus. The Government plan was that the colleges would pay 50 per cent of the cost of their new buildings in the University area, the government contributing the balance. The colleges which have not yet shifted to the University site now claim that on account of the rise in the cost of building, they should be granted 75 per cent of the expenses. We very much hope that some arrangement will be reached between the Government and the college authorities which would enable the colleges to move to the University area.

24. *Federation of Colleges.*—If these projects materialise the Delhi University plans for a federated group of colleges situated on the campus will be successful. The colleges could then undertake the full responsibility of constituent colleges as outlined in Chapter XIII, *i.e.* their staff should not merely be recognised by the University but should hold joint appointment as University Lecturers and College Tutors and they should be appointed by the University

and College jointly. If these plans do not materialise in the near future the University may expand by starting colleges of its own like Miranda House on the Durham rather than on the Oxford plan. In that case the campus colleges would be the constituent colleges of the University and the existing colleges in Old and New Delhi would be affiliated institutions either of Delhi Univerity or if Delhi University wishes to include only constituent colleges, of the nearest teaching and affiliating University. The University may centralise post-graduate work but B. Sc. teaching will have to be carried on in the colleges. Delhi University should not affiliate colleges or institutions outside the immediate neighbourhood of Delhi itself. There is no advantage in, *e.g.* Dehra Dun Forest Institute, just because it is an All-India Institute, linking itself with Delhi on account of its being a Central University. That principle, if applied wholesale, would lead *all* All-India Institutes to affiliate with Delhi University ; and that would be harmful to the Institutes (owing to 'remote control') to the local universities (since there ought to be a link between such Institutes and the neighbouring university), and to Delhi University itself (by altering it from a 'federative teaching' to a 'teaching and affiliating' university). An isolated Institute like Dehra Dun had probably better become an autonomous degree-giving college.

25. *Delhi as a Central University.*—Banaras and Aligarh are Central Universities because of the conditions of their foundation and the traditions which they have built up. These two institutions owed their inception to donations and endowments collected from all over the country. As the Hindu or the Muslim University they appealed to the members of one community and students from all parts of the country were attracted to them. The technological and professional institutions could, by virtue of the training they imparted, draw students from every province. Delhi is "Central" mainly because geographically it is outside any full-fledged province, and as the capital city is able to draw students from other parts of the country. The Central Government has done for Delhi University what Provincial Governments do for the universities of their provinces. It does not appear to have been treated too generously by the Central Government till the last few years. Geographically, too, the development of New Delhi as the capital of independent India has already increased both the size and the importance of Delhi University, and this process is bound to continue, yet, though the capital should have a university worthy of it any tendency of the Central Government to locate All-India Institutes in Delhi as a matter of course, would be unwise. We are glad to note that the Government of India does not contemplate the location of more All-India Institutes at Delhi.

26. *Development of the University as a Centre of Research.*—It is too early to pass judgment on the advanced work which has so far been done at this university. It has expressed the desire to concentrate its graduate activities on a few subjects but if it does not get the co-operation of all the colleges in building up a federative university it may have to offer instruction for the Honours and Master's degree in most of the Arts subjects in addition to part of what it is doing for the Science subjects. This will divert a large proportion of its funds for teaching the first degree classes and make it difficult to build up research activities. These latter should therefore be limited to two or three subjects in the Faculty of Arts and the same number in Science. The existence of the National Physical Laboratory and the Agricultural Research Institute at Delhi should help the research students of the University, if there is full co-operation between the University and these Institutes. Similarly organizations like the Council of World Affairs and the Asian Relations Organisation may work in co-operation with the University for the investigation of sociological, political or economic problems. Proper attention should be paid to the Library and the Laboratories. We hope that administrative problems of a federative or affiliating university will not interfere with the building up of a genuine centre of academic research at Delhi.

27. *Future Professional Education at Delhi.*—The Law Faculty has been developing its activities and has started B. C. L. and LL.M. courses in addition to those for the LL.B. In Chapter VII we have adduced reasons for having one Bachelor's degree in Law; we hope that a thorough training for the Master's degree will lead at least some of the best students to devote themselves to research in some specialized branch of Law. The future of the Faculty of Agriculture is uncertain : we do not know if the Central College of Agriculture will function in future or if the University will be able to run a Faculty of Agriculture. The Faculty of Medicine has at present only courses in tuberculous diseases : schemes for a Medical College at Delhi have not yet fructified ; but the Lady Hardinge Medical College may profitably become a constituent college of the University. Then the Faculty of Medicine will be more of a real Faculty than what it is now. The College of Nursing is at present the only Government College which may be described as a constituent college. It is maintained by the Ministry of Health, but the Ministry has conceded the principle of management by a Governing Body which has, in addition to the Principal, a representative of the teaching staff and two members appointed by the University. The Central Institute of Education which constitutes the

Faculty of Education should confine its activities mainly to research in the problems of education, even though it trains a small number of students for the first degree. We are glad to note that it will have an Institute of Psychology associated with it.

28. *General Remarks on Delhi University.*—The University has made considerable progress during the last five years, but it might have done more if a good deal of the time of the University authorities were not taken up with administrative problems mainly relating to the colleges and their relationship with the University. In this respect an unsettled state of affairs has continued for more than a quarter of a century and it should now be settled in a definite fashion so that the University may have time to concentrate on its other duties in expanding and consolidating its teaching activities and in building up a centre of post-graduate and research work.

29. *The Medium of Instruction in All-India Universities.*—We have recommended in Chapter IX the adoption of the regional or federal language as the medium of instruction in universities. For these three universities where students from all parts of India are expected to study, the medium of instruction must be the federal language. It will however take six years for students from outside the area of the federal language to acquire mastery of it. The study of the federal language should be started as early as possible in all schools situated in areas where the federal language is not the mother-tongue. In six years from the time of the introduction of this study the students should be able to follow university instruction in the federal language. During this period the all-India universities should continue English as a medium of instruction though the federal language may be an alternative medium.

30. *Recommendations.*—We recommend :—

(1) that the relationship between the colleges and the University should now be definitely settled and colleges which cannot shift to the University campus by July, 1951, be regarded as affiliated colleges ;

(2) that the University be a teaching and affiliating university and conform to the constitution and structure of such a university ;

(3) that post-graduate teaching in Arts, Science, Commerce and Law be concentrated in the University ;

(4) that for this work the full-time university teachers be helped by those who have been appointed by the constituent colleges and the University jointly ;

(5) that as a Central University Delhi should offer facilities for work to students from all over India and in the Faculties with a limited number of seats students from outside Delhi and its neighbourhood should also have quotas reserved for them ;

(6) that after a careful scrutiny of the present recurring expenditure on teaching activities, a block grant be fixed allowing for the present expense and those likely to occur as part of a scheme accepted by the University Grants Commission ;

(7) that for research-work the University should attempt to co-operate with the all-India Institutes and learned societies at Delhi ;

(8) that the courses be remodelled on the basis of our recommendations in Chapters V and VII ;

(9) that the possibilities for further professional education in the University be explored.

Additional recommendation on all the three Universities.—That the medium of instruction in these universities be the federal language and that during the six years which will elapse before students from other areas can master the federal language, instruction be given both in the federal language and in English.

CHAPTER XVI

Other Universities.

I.—Calcutta University.

1. Early Bengal Colleges. 2. Government and Missionary efforts. 3. Indian private effort. 4. Benefactions of philanthropists. 5. Encouragement of private Colleges. 6. Growth of numbers. 7. Overcrowding. 8. Post-Graduate education in Arts and Science. 9. Conditions since the Calcutta University Commission : (*i*) Disparity between Government and private institutions ; (*ii*) University control on private colleges nominal ; (*iii*) Stagnation of Government institutions. 10. Other defects : (*i*) Indiscipline ; (*ii*) Location in congested area ; (*iii*) City congestion ; (*iv*) Problems of discontented students and teachers ; (*v*) Undemocratic Constitution. 11. Remedies : (*i*) Removal of overcrowding in Colleges ; (*ii*) More varied opportunities for students ; (*iii*) Remodelling of the crowded Colleges ; (*iv*) Finances of private Colleges ; (*v*) Management of private Colleges ; (*vi*) Non-professional Government Colleges. 12. Constitution : (*i*) The Vice-Chancellor ; (*ii*) The Senate ; (*iii*) Other University bodies ; (*iv*) Board of Students' Welfare ; (*v*) Extension Board.

II.—Bombay University.

13. Establishment of the University. 14. Universities Act of 1904 and after. 15. The Act of 1928. 16. The future : (*i*) Establishment of Regional universities and its effect on Bombay University : (*a*) A teaching University with Constituent Colleges including Professional institutions ; (*b*) The establishment of New Departments and Faculties ; (*ii*) Government Colleges and the University ; (*iii*) Expansion of Teaching activities ; (*iv*) Professional Colleges ; (*v*) Constituent Colleges ; (*vi*) The system of elections.

III.—Madras University.

17. The establishment of the University. 18. Changes introduced by the Acts of 1904 and 1923. 19. Development from 1923 to 1947. 20. The future : (*i*) The Recommendations of the General Inspection Commission of 1947 : (*a*) Number of students in colleges ; (*b*) Starting of new Colleges ; (*c*) New subjects of study ; (*d*) Honours studies ; (*ii*) Plans for the Reorganization of the Presidency College ; (*iii*) Development of Professional Colleges.

IV.—Allahabad University.

2. Development of the University from 1887 to 1921. 22. Changes in this University after 1921. 23. Plans for the future : (*i*) Additional accommodation ; (*ii*) Honours Courses ; (*iii*) Additional scholarships ; (*iv*) Co-ordination of higher studies.

V.—Mysore University.

24. Establishment of the University. 25. Its work from 1916 to 1949. 26. Plans for the future : (*i*) Change of administration and grants for the University : (*a*) Additional 'merit' Scholarships ; (*b*) Additional residential accommodation ; (*c*) Specialisation : (A) Oriental Studies ; (B) Psychology ; (*d*) Professors and laboratories. (*ii*) Arrangements for Secondary Education ; (*iii*) Affiliation of Colleges ; (*iv*) The responsibilities of the Vice-Chancellor.

VI.—Patna University.

27. Establishment of the University : the Act of 1917. 28. Development from 1917 to 1949. 29. Plans for the future : (*i*) Development of teaching activities ; (*ii*) Position of the Patna and the Science Colleges ; (*iii*) B.N. College and the Women's College ; (*iv*) Professional Colleges ; (*v*) Administrative structure ; (*vi*) The New Bill.

VII.—Osmania University (Hyderabad-Deccan).

30. Establishment of the University. 31. Work from 1918-1948. 32. Plans for the future : (*i*) The University to be autonomous ; (*ii*) Medium of instruction ; (*iii*) Women's College and Medical College ; (*iv*) Needs of Science Departments ; (*v*) Honours Courses ; (*vi*) Research work.

VIII.—Lucknow University.

33. Work since its establishment. 34. Plans for the future : (*i*) Concentration on higher work; (*ii*) Effective Honours Courses; (*iii*) Additional accommodation ; (*iv*) Better tutorial instruction ; (*v*) Library ; (*vi*) Scholarships and Fellowships ; (*vii*) Research work in the Medical Faculty.

IX.—Nagpur University.

35. Establishment of the University. 36. Functions of the University. 37. Work of the University from 1923 to 1949. 38. Plans for the future : (*i*) Position of Government Colleges ; (*ii*) Laxminarayan Institute.

X.—Andhra University.

39. The University since its inception. 40. Plans for the future : (*i*) Improvement of salaries and removal of other difficulties ; (*ii*) Applied Science and Technology : New branches of study ; (*iii*) Maintenance of standards in affiliated institutions.

XI.—Agra University.

41. Work since inception. 42. Plans for the future : (*i*) Ten-year plan for the development of a teaching University ; (*ii*) University Library ; (*iii*) University Laboratories ; (*iv*) Honours Degrees ; (*v*) Inter-Collegiate teaching ; (*vi*) Exchange of teachers ; (*vii*) New universities and greater supervision of affiliated institutions.

XII.—Annamalai University, Chidambaram.

43. Establishment of the University. 44. The work of the University from 1929 to 1949. 45. Plans for the future : (*i*) Improvement of teachers' salaries ; (*ii*) Additional residential amenities ; (*iii*) Scholarships ; (*iv*) Engineering College ; (*v*) Music and Oriental studies.

XIII.—Travancore University.

46. Establishment of the University. 47. The work of the University from 1937-1949. 48. Plans for the future : (*i*) Promotion of Research work ; (*ii*) Oriental Manuscripts Library ; (*iii*) Marine Biology and Mineralogy ; (*iv*) Three-year Degree course ; (*v*) Cochin Colleges.

XIV.—Utkal University—Cuttack.

49. The work of the University since its inception. 50. Plans for the future : (*i*) Necessity of a teaching University ; (*ii*) The position of the Ravenshaw College ; (*iii*) Consolidation and extension of Post-graduate teaching ; (*iv*) Ancient History and Anthropology.

XV.—Saugor University.

51. The work of the University since its inception. 52. Plans for the future : (*i*) Suitability of Saugor as a University site ; (*ii*) Non-recurring grants for new buildings and equipment ; (*iii*) Necessity of a better paid staff ; (*iv*) Scholarships ; (*v*) Ensuring better finances ; (*vi*) Concentration on higher work : Difficulties of Professional Education.

XVI.—University of Rajputana—Jaipur.

53. Work since its inception. 54. Plans for the future : (*i*) Teaching work and research ; (*ii*) University Library ; (*iii*) Fellowships and other facilities for higher work ; (*iv*) Specialization in some sciences ; (*v*) More Professional Colleges ; (*vi*) Colleges for women.

XVII.—East Punjab University.

55. Problems of the University. 56. Suggested solution of the problems : (*i*) Location of the University ; (*ii*) Financial provision for new buildings ; (*iii*) Provision for the recurring expenses of the University ; (*iv*) Post-Graduate teaching in Arts and Science : Oriental Studies.

XVIII.—University of Gauhati.

57. The work of the University since its establishment. 58. Plans for the future : (*i*) Permanent buildings : financial provision for these ; (*ii*) University Library ; (*iii*) New subjects for advanced studies ; (*iv*) Professional Colleges for Education and Engineering ; (*v*) Recurring grants.

XIX.—University of Poona.

59. Establishment of the University. 60. The Act. 61. The relationship between the Poona colleges and the University. 62. The future expansion of the University : (*a*) Sanskrit studies ; (*b*) Maratha history ; (*c*) The life and work of the sages and saints of Maharashtra ; (*d*) Fine Arts ; (*e*) Ayurveda ; (*f*) Other subjects for specialisation ; (*g*) The Women's University ; (*h*) Buildings.

XX.—The Maharaja Sayajirao University of Baroda.

63. The Act. 64. Financial provision for the University. 65. Plans for the expansion of the teaching activities of the University : (*a*) Home Science ; (*b*) Fine Arts ; (*c*) Technology ; (*d*) Arts and Science chairs ; (*e*) Other professional institutions.

I.—Calcutta University.

1. *Early Bengal Colleges.*—In the first chapter we have referred to the establishment of the Calcutta University and to some of the colleges out of which it developed. For the first half of a century of its existence the University was a purely affiliating one and therefore the history of its activities was the history of its colleges. Of these the first institution was the Hindu College established in 1817 through the joint efforts of David Hare and Ram Mohan Roy which was carried on by a non-official body till 1855 when it was taken over by the Government and developed into the Presidency College. Three Missionaries, Carey, Marshman and Ward started the first Mission College at Serampore in 1818, and 9 years later it received a charter from the King of Denmark empowering it to grant degrees. At Sibpur, a suburb of Calcutta, the Church of England Mission established the Bishop's College in 1820, and 10 years later Alexander Duff started the General Assembly's Institution which soon grew into a college.

2. *Government and Missionary efforts.*—The earliest attempts for the extension of higher education were made by two agencies,—the Government and the Missions. The former was responsible for the establishment of the Hooghly College in 1836, Dacca College in 1841, Krishnagar College in 1845 and Berhampur College in 1853. The Government was also responsible for the foundation of the Medical College in 1835. Missionary effort led to the creation of the Free Church Institution in 1843, the St. Xavier's College in 1862 and the St. Paul's College in 1865. This last named institution was however soon discontinued and re-started in the closing years of the century.

3. *Indian private effort.*—Indian non-official organisations did not play a leading part in the advance of higher education for nearly half a century after the establishment of the Hindu College. It was in 1869 that Ishwar Chandra Vidyasagar founded the Metropolitan Institution and this was followed by the City College and the Albert College in 1881. The former owed its existence to the efforts of the Brahmo Samaj and the latter institution was wound up after functioning for a number of years. The College of Engineering was founded in 1856 by the Government and in 1872 a second grade college was established at Rajshahi in North Bengal which was developed a few years later into a first grade institution.

4. *Benefactions of philanthropists.*—For this as well as other Government colleges founded at Chittagong in 1869 and at Midnapur in 1873, local benefactions were obtained, the contributions being given on the understanding that the colleges would be managed by the Government. The colleges at Hooghly and Krishnagar had also received similar benefactions and the history of the development of each one of these colleges might be the theme of interesting narratives, illustrating the growth of higher education in Bengal through the joint endeavours of the Government and the philanthropists.

5. *Encouragement of private Colleges.*—The 1882 Commission advocated the transfer of Government colleges to non-official agencies and following this policy the college at Midnapur was transferred to the control of the Municipality in 1887 and that at Berhampore to the control of the Maharaja of Kasimbazar. The growth of new colleges under private management was encouraged and so in the last two decades of the century many such institutions were established. Among these may be mentioned particularly three colleges in Calcutta, the Ripon College (1884), the Bangabasi College (1887) and the Central College (1896). The Maharaja of Burdwan started a college in 1882 at Burdwan and colleges were started at Dacca, Cooch Behar, Barisal, Pabna, Mymensingh and other places.

6. *Growth of Numbers.*—The jurisdiction of the Calcutta University was not circumscribed by provincial limits and among the affiliated institutions were not only the colleges in Bengal, Bihar, Orissa and Assam but also those in the United Provinces, Central Provinces, Burma and Ceylon. The establishment of new universities restricted its sphere of work but did not curtail its numbers. The increase in the number of students has been referred to in the first chapter and it may be emphasised here again. The total number of college students was 3,827 in 1882, 8,150 in 1902, 28,618 in 1917, 30,202 in 1927, 35,357 in 1937 and 45,008 in 1947. In the last mentioned year there were 2,41,794 students in the twenty universities of India taken together and of these nearly 20% was the enrolment of the Calcutta University. The partition of the province did not lead to any substantial decrease in the number of students, as in 1948 the University still had over 41,000 students, and today it has 74 affiliated colleges of which 36 are in the city of Calcutta. Five of the Calcutta colleges,—Vidyasagar College (formerly Metropolitan), Surendranath College (formerly Ripon), City, Bangabasi and Asutosh (formerly South Suburban) have between them an enrolment of 30,492 students.

7. *Overcrowding.*—The building and equipment of these colleges are far from satisfactory, for they have not been able to keep pace with the increase in the number of students. The total area on which some of these colleges are built does not extend to even one acre and the rooms cannot accommodate more than a fraction of the students on the rolls. Lectures in double and treble shifts, practical work in 30 to 40 sections mark the organisation of some of these institutions which have been carrying on without any help from the Government and have been mainly responsible for the higher education of the province. The conditions in which many of the students of these colleges live are extremely unsatisfactory.

8. *Post-graduate education in Arts and Science.*—Post-graduate education in the University is under its direct control. The University Colleges of Arts and Science were started with high hopes and their early work largely justified the original expectations. Generous donations from philanthropists like Taraknath Palit, Rashbihari Ghosh and Kumar G. P. Singh were supplemented by Government grant for a few chairs but the mainstay of the University was its fee income,—the income derived from the thousands of examinees flocking to its portals, anxious for a university certificate or diploma.

The University College of Science and Technology and the University College of Arts, are almost entirely devoted to post-graduate training and research in 14 different branches of science and a similar number in arts, though some departments do a certain amount of under-graduate teaching. The total budget is about 25 lakhs. Though graduate study in the American sense was first organised in these colleges in 1915, due to the initiative and foresight of the great educationist, Sir Asutosh Mukherji and though the Calcutta University Commission gave unstinted support for the philosophy and organisation of such studies, these university post-graduate colleges have not made satisfactory progress in the last 30 years. They have been, however, the centres of great research schools in fundamental sciences, arts, history, philosophy, and oriental studies. Some departments like Botany, Zoology, Anthropology, Physiology, Geography, Statistics and Geology have been housed in insufficient temporary buildings for the last 30 years. With adequate financial support the University College of Science might have developed along the lines of the Imperial College of Science in London, for after a long period of inactivity, a new scheme of expansion has now been launched ; it has already organised, thanks to the liberal grants given by the Central Government, an Institute of Nuclear Physics, an Institute of Radio Physics and Electronics and has expanded its activities in Applied Physics and Chemistry.

There are other schemes of development in contemplation. The University has now got an Institute of Jute Technology, out of endowments given by the jute merchants and manufacturers of Calcutta, and an Institute of Social Studies endowed by the Central Government.

9. *Conditions since the Calcutta University Commission.*—In the first chapter we have mentioned the work of the Calcutta University Commission and its recommendations. During the thirty years which have elapsed since the publication of its report no steps have been taken to implement these recommendations and as a result of thirty years of inaction, the organisation and management of colleges have suffered.

(*i*) *Disparity between Government and private Institutions.*—There is extreme disparity in equipment and efficiency and in the salaries of teachers due to the differences in origin of the institutions. As teachers doing the same kind of work get widely different scales of salary, there is a dangerous undercurrent of jealousy, suspicion and ill-will between teachers of government colleges and those of private colleges.

(*ii*) *University Control on private Colleges nominal.*—The control of the university in enforcing standards of efficiency and reasonable scales of salary for the teaching profession in the colleges affiliated to it is in most cases merely nominal as it has no funds at its disposal to give effect to these proposals, and has no control over appointments either in government or in other affiliated colleges. The Government of the country, though it is now national, has as yet assumed no real responsibility to improve the conditions of the private colleges by helping them to acquire land, for building places of instruction, residences for students and hostels, and to raise the scale of salaries of teachers to the standard of even living wages.

(*iii*) *Stagnation of Government Institutions.*—Some of the colleges under the direct control of the government have either declined in efficiency, or remained in a state of stagnation during the last 30 years, since the Calcutta University Commission reported on their condition. This is partly due to the fact that neither the Principal nor the teachers are allowed much initiative which has to come from the corresponding Ministry (*e.g.*, from the Ministry of Education for Arts, Science and Engineering Colleges, or from the Ministry of Health in the case of Medical Colleges). The governing bodies of these institutions have little power, and meet infrequently.

10. *Other defects.*—The position is further complicated by the following factors :—

(*i*) *Indiscipline.*—The spirit of indiscipline among students which has been aroused by the leaders of the country in their struggle for freedom has now become a habit. This spirit of indiscipline, once excited, is very difficult to put down in spite of the best efforts of the leaders and the Government.

(*ii*) *Location in congested area.*—The University and other educational institutions are located in the most congested area where students are constantly distracted from their studies by different types of confusion and disorder.

(*iii*) *City Congestion.*—There has been terrible overcrowding in the city due to war conditions and the influx of refugees from East Bengal. It is now estimated that greater Calcutta from which the colleges draw their students has a population of 6 millions which is almost a fourth of the whole population of West Bengal. Such sudden increase of population generally creates stresses which it is difficult for any administration to overcome in a short time. This has also resulted in overcrowding in the Calcutta colleges and the University and there has been no improvement in the residential arrangements for the students.

(*iv*) *Problems of discontented students and teachers.*—We are afraid that the problems of Calcutta have not only local but general significance. Movements for the overthrow of the present system of Government already exist in an embryonic form there, movements in which the discontented elements of the student population get involved. The total student population of Calcutta has assumed huge proportions, and there are also those who have left their studies and have not been able to obtain employment. The leaven of this discontent is furnished by a large number of poorly paid teachers of schools, colleges and universities who find it extremely difficult to scrape a livelihood on their meagre salaries, which even in normal times were insufficient as was noticed by the Calcutta University Commission thirty years ago but now owing to inflation can hardly enable them to keep body and soul together.

(*v*) *Undemocratic constitution.*—Further, the constitution of the Calcutta University is still governed by the undemocratic Act of 1904. 80% of the members of the Senate, which is the supreme executive and policy-making body are nominated by the Chancellor on the advice of the Vice-Chancellor, though he is not bound to accept his suggestions; 20% are elected by the Faculties and the Registered

Graduates. When a Senate is formed, it proceeds to form the different Faculties out of its own members. The Faculties in turn co-opt a number of teachers of the University and the private colleges to its own body.

Much criticism has been levelled against this system. It has been alleged that nominations have not always represented academic interests. Before the partition a deliberate attempt was made to capture the University by nominations based entirely on communal considerations.

11. *Remedies.*—(*i*) *Removal of overcrowding in colleges.*—The biggest problem of Calcutta is the congregation of the huge number of students and the consequent inefficiency in education. To a great extent the number of students depends on the population of Calcutta which has had an abnormal increase during the last two years and so long as the population remains at its present level it may not be possible to reduce the total number of students. What can be done, however, is :—

(*a*) To prevent students from coming to Calcutta from outside for purposes of study except where the subjects cannot be studied at an outside centre ;

(*b*) To distribute the present number of students in many institutions instead of allowing them to collect in just a few. The total enrolment in any single institution should not exceed 1,500.

(*ii*) *More varied opportunities for students.*—The proportion of high school students proceeding to the University will be reduced if more appropriate and productive opportunities are provided in accordance with the suggestions made for that purpose in the preceding chapters.

(*a*) As early as possible, as a first step, four Occupational Institutes should be started in different parts of Calcutta, which will provide for the training of about 1,000 young men in each, in different vocations. The students who have completed their education at the present high school stage should be eligible for admission at these institutes.

(*b*) If Intermediate education will no longer be a part of the University curriculum, for the majority of University students in Calcutta who are in the Intermediate classes numerous Intermediate colleges have to be started and some of the present weak degree colleges may have to be content with training students only

up to the Intermediate stage. The situation of these Intermediate Colleges has got to be planned according to the needs of the different quarters of the city. An examinatin of the geographical location of the 26 non-professional Calcutta colleges shows that they have not been properly distributed. While there are numerous institutions in the neighbourhood of College Square or in South Calcutta, there are many congested localities without any educational facilities. This may not be a serious matter if communications between the different parts are improved as they are likely to be, but in a city like Calcutta the student population should not be concentrated in a few areas.

(*c*) There is scope for the establishment of a few degree colleges which would be mainly residential. The Government House at Barrackpore is lying abandoned and no use is being made of its immense compound. The possibility for the establishment of three colleges with adequate hostels and teachers' residences should be explored. It will no doubt be an expensive project but it will help to build up the atmosphere of a teaching university within easy reach of Calcutta where day scholars from the northern section of the city may not find it difficult to study, even though they are not resident at Barrackpore. Hastings House at Alipore and its extensive grounds may be profitably utilised for the building of another institution of the same type where the majority of students and teachers will be resident, though a certain percentage will be day scholars from South Calcutta. A third possibility is on the grounds of the old Belvedere which now houses the National Library. The location of the library in the campus would be of immense benefit to the colleges when they spring up.

(*iii*) *Remodelling of the crowded Colleges*.—With the establishment of Occupational Institutes and separate Intermediate colleges it should be possible to reduce the numbers in the five big colleges to a more reasonable figure. But the reduction of numbers by itself is not enough : the colleges have to be remodelled with more grounds, better facilities for physical education and improved residential accommodation.

(*iv*) *Finances of private Colleges*.—This raises the question of finance. The private institutions of Calcutta have carried on for more than half a century without practically any grant from the Government. Our National Government has to ensure the maintenance of these institutions which are now wholly dependent on students fees, on a proper financial basis. As indicated in the earlier chapters, each institution should be mainly dependent on recurring grants received from the Government, the other sources of income being

endowments and students' fees. Salaries and conditions of service of the teachers have to be improved according to our general recommendations.

(*v*) *Management of private Colleges.*—The management of these institutions has naturally to undergo radical changes. Here again the composition of managing committees must follow the general lines suggested earlier with representatives of the University, the donors and the alumni and definite powers should be assigned to the governing bodies.

(*vi*) *Non-professional Government Colleges.*—The Government institutions present a different problem. There is little justification for continuing these institutions under the present management if they are doing the same work as the private colleges. To justify the expenditure on these institutions the following steps may have to be taken :

(*a*) There should be no Intermediate classes in any one of these institutions ;

(*b*) The Presidency College is to concentrate entirely on Post-graduate teaching in a certain number of subjects and be an integral part of the University. The services of those teachers of the colleges who are appointed by the University Selection Committee will be continued in the Presidency College and the others should be transferred to other Government Colleges.

(*c*) The Sanskrit College will naturally concentrate on oriental studies, and the Central College on Honours Courses in Arts and Science. The Bethune and Brabourne Colleges will have both Pass and Honours Classes and for some time it may be necessary to continue the Intermediate classes until Intermediate Colleges are built for girls in the same localities.

(*d*) Colleges at Hooghly and Krishnagar will do both Pass and Honours work and be able to accommodate degree students upto the limit proposed by us for each college, *i.e.*, 1,500. The Intermediate students who now proceed to these two colleges will have to be educated at new institutions established for them.

(*e*) The management of these Government Colleges (except the Presidency College which should be handed over to the University with proper safeguards for the existing staff) will be vested in specially constituted Governing Bodies which will be responsible for the entire management of the colleges including appointments. These Governing Bodies will, we hope, be constituted on the lines indicated in Chapter XIII.

12. *Constitution.*—It has been pointed out that the constitution of the Calcutta University has remained practically what it was after the Act of 1904. With the introduction of the Montague-Chelmsford Reforms and the transfer of the Education portfolio to popular Ministers, steps were taken in other provinces to change the constitution of universities, but nothing was done in Bengal. The constitution of the Calcutta University has now therefore no parallel in India or outside. We recommend that this constitution be amended on the lines suggested in Chapter XIII. It may be necessary to note specially the following points in the changes :—

(*i*) *The Vice-Chancellor.*—The Vice-Chancellor must be a whole-time salaried officer, holding office for six years. The method of his appointment and his responsibilities will be the same as in any other teaching-cum-affiliating universities. The suggestion of the appointment of a whole-time Pro-Vice-Chancellor made by the Vice-Chancellor and the Syndicate of the Calcutta University would show that they regard the work of the University to be of such a nature as to require a whole-time officer at the helm of affairs.

(*ii*) *The Senate.*—The Senate of the University while following the general lines of other universities may have to be slightly larger, say, 120, in order to allow for the representation of the numerous teaching departments of the university as also of the colleges.

(*iii*) *Other University bodies.*—The Academic Council, the Faculties and the Boards of Studies need not be materially different from what they are elsewhere.

A University Grants Committee may be set up for the Province of West Bengal with a salaried Chairman and Secretary composed on the lines indicated in Chapter XIII.

(*iv*) *Board of Students' Welfare.*—A Board of Students' Welfare is particularly necessary for a city like Calcutta. Its main functions would be to look after :

(*a*) The conditions of students' residence ;

(*b*) Health of students ;

(*c*) Physical Instruction ;

(*d*) Organised games and recreations. The constitution would be on the lines indicated for this purpose in Chapter XI.

(*v*) *Extension Board.*—One of the responsibilities of each university is to extend its activities beyond its immediate clientele and to stimulate the general intellectual life of the region. On account of the peculiar conditions of the province of Western Bengal

and of the city of Calcutta, this University has special responsibilities for extension work. A University Extension Board with the Vice-Chancellor as its Chairman should be constituted not only to arrange courses of lectures for the public but to carry on the work of social education in the province.

II.—Bombay University.

13. *Establishment of the University.*—The University of Bombay was brought into existence by Act XXII of 1857 which received the assent of the Governor-General on 18th July. It was described as having been established for the " purpose of ascertaining, by means of examination, the persons who have acquired efficiency in different branches of Literature, Science and Art and of rewarding them by Academic Degrees ". Beyond prescribing courses and holding examinations it had practically no powers, neither to inspect colleges nor to give instruction on its own. The constitution as prescribed by the Act stipulated the appointment of a Chancellor and a Vice-Chancellor with a Senate which had no elected Fellows and the membership of which was to be not less than 26 (actually the first Senate had 39 Fellows).

The oldest colleges of the University are

The Elphinstone College ;

Wilson College ;

Grant Medical College ; and

The Government Law College, one of the earliest institutions the Deccan College, having disappeared.

The condition for the recognition of colleges was a very simple one :—the institutions had to send a list of the members of the staff and the courses of study provided by it with a statement from two Fellows bearing testimony to the solvent finances of the college.

The University held its first Matriculation Examination in 1859 when 132 candidates presented themselves and only 22 passed. The first batch appearing for the B.A. examination in 1862 had better luck as four passed out of six, one of them being the late Mahadeva Govinda Ranade.

14. *Universities Act of 1904 and after.*—The Senate which had started with 39 Fellows had grown to 305 in 1900. The Indian Universities Act of 1904 reduced the size of the Senate to 100 of whom 10 were to be elected by the Registered Graduates, 10 by the Faculties and the others to be nominated by the Chancellor. This Act also widened the powers of the universities by giving them the right to organise teaching through the appointment of University

Professors and Lecturers and to exercise more effective control over the affiliated colleges through periodical inspection. In spite of the expansion of its powers the University of Bombay could not undertake any responsibilities for a few years owing to lack of funds. In 1912 the Government of India offered to the University a non-recurring grant of three lakhs of rupees which was increased to five lakhs in the following year. In addition, a recurring annual grant of Rs. 45,000 was sanctioned for developing the teaching functions of the University. On receipt of the grant the Senate decided to start university teaching in Economics, to make use of the teachers of the affiliated colleges for organising post-graduate instruction, to invite distinguished foreign scholars, to develop the University Library and to encourage research work. To give effect to these resolutions Sir Alfred Hopkinson, a former Vice-Chancellor of Manchester University was invited to Bombay, and the University took steps on his report to re-organise the library and develop inter-collegiate M.A. teaching. The University School of Economics and Sociology was started in 1919 with Professor Patrick Geddes as its first professor. During the next few years the scheme of post-graduate studies was revised but the revised scheme was found unworkable after some trial.

15. *The Act of 1928.*—A Committee was set up by the Government of Bombay in 1924 and it was required to examine the constitution and functions of the University with a view to introducing necessary changes. The Bombay University Act of 1928 incorporated many of the recommendations of the Committee and changed the constitution of the Senate so as to give a preponderance to elected members in it. Formerly only 20% of the Fellows were elected and under the new Act provision was made for the election of 93 Fellows as against 40 nominated ones, the former being chosen not only from Academic constituencies but also from local board and commercial interests. This Act also changed the nature of the University from an affiliating and examining body to a real teaching institution. One of the first fruits of the Act was the establishment of the Department of Chemical Technology which commenced its work in 1934 and which, with the help of some donations from generous philanthropists, has expanded its activities considerably during these 15 years.

16. *The future*: (*i*) *Establishment of Regional Universities and its effect on Bombay University.*—One of the recommendations of the Committee set up in 1924 related to the establishment of regional universities. Universities have since been established at Poona and Baroda and a bill introduced for the Karnatak University. There

may be universities at Ahmedabad and Anand in the near future. The establishment of these universities will restrict the sphere of work of the Bombay University.

(*a*) *A Teaching University with constituent Colleges including Professional Institutions.*—If the colleges of Gujerat, Maharashtra and Karnatak are no longer under the jurisdiction of the Bombay University, its affiliating activities will be mainly confined to the city of Bombay and its suburbs. It will thus be in a position to regard all these colleges as constituent colleges and it will assume the nature of a teaching and federative university. The colleges will roughly be classified as professional and non-professional ones, the Medical Colleges (including those of Dentistry and Veterinary Science), the Law College, the College of Commerce, the Training College and the Technical Institute will be the professional colleges.

The development of these will be dependent on changes in the social and economic structure of the Province. It may be necessary to have more teachers or more doctors or more engineers and the State will have to make provision for the supply of an adequate number of the trained personnel.

(*b*) *The establishment of New Departments and Faculties.*—It is naturally not possible to say anything more definite about the expansion of the activities of the professional institutions. It may only be noted that as early as 1925 the University Committee had recommended the establishment of a chair for Pharmacology and Materia Medica as also of a Faculty of Fine Arts with degrees in Painting, Sculpture, Architecture and Music. No action has yet been taken on these recommendations but it is hoped that these recommendations will be implemented in the near future.

(*ii*) *Government Colleges and the University.*—One main problem of the non-professional colleges is the differentiation between those which are managed directly by the Government and those which are the responsibility of private agencies. The cost of maintenance of the former is proportionately higher ; the scale of salaries for teachers is better and the equipment in the shape of libraries and laboratories more efficient. As has already been suggested, under present conditions there is no justification for differentiation between the Government and the non-Government institutions. If this viewpoint is accepted the Elphinstone College and the Royal College of Science may be handed over to the University to be run as institutions for higher study (Honours and Post-Graduate), though the college at Andheri may be run along present lines on account of the peculiar conditions of its foundation.

(*iii*) *Expansion of Teaching activities.*—The transfer of the Elphinstone College and the Royal Institute will enable the University to develop the plans formulated from time to time about the expansion of its teaching activities. The University Expansion Committee which submitted its report in 1941 proposed the extension of the University Departments of Economics and Sociology with the addition of new Lectureships and recommended the establishment of the following new departments :—

(*a*) The department of Experimental Psychology ;

(*b*) The department of Mathematics ; and

(*c*) The department of Military Studies.

A new chair of Political Science has been established and new lectureships created in the School of Economics and Sociology but nothing more substantial has been achieved. The expenditure of the University (exclusive of capital expenditure) in 1939-40 was roughly Rs. 12,38,000 of which nearly Rs. 2,00,000 was on the department of Chemical Technology, Rs. 67,000 on the department of Economics and Sociology and Rs. 52,000 on the University Library, the balance being devoted to examination charges, establishment charges, travelling allowances and the like. Today the position is not very much better but it is hoped that with a reduction of the affiliating and examining work of the University attention will be focussed on the development of direct teaching by the University and the organisation of inter-collegiate work wherever it is possible.

The Vice-Chancellor suggests the establishment of a department of Ancient Indian Culture, a Faculty of Fine Arts, a School of Aeronautics and a School of Journalism. The first of these may be developed out of the resources of the present Elphinstone College with the necessary additions to the staff and the Library. The department of Experimental Psychology proposed in 1941 may be created as an adjunct of the Department of Education, while Mathematics will naturally find a place in the Institute of Science. The other departments will have to be established independently in the University campus which was recommended by the Committee in 1925 but which has not so far been given any consideration.

(*iv*) *Professional Colleges.*—Of the professional colleges run by the Government, the Commerce College is seriously handicapped through lack of proper accommodation,—residential and teaching. This should also be transferred to the University and used mainly for post-graduate teaching in Commerce. If the other colleges cannot cope with the rush of under-graduate students it may be

necessary to continue in this institution instruction for the first degree for some years to come. But other institutions should be encouraged to start these under-graduate classes and they should gradually be suspended in the Sydenham College.

The University Reform Committee had recommended in 1925 that the University should take over the Government Law College and, under present conditions, when the University is attempting to reform Law studies, it appears necessary to carry out this old recommendation. The University has tried the innovation of admitting students who have passed the Intermediate Examination to LL.B. courses; our views on this question are found in another chapter. There are attempts to make the LL. M. course a real one. It is expected that better training will be possible and some research work attempted when the University has a proper department of Law.

The Training College should be the nucleus of the department (or Faculty) of Education. Here again there is considerable scope for post-graduate and research work. The training colleges at Kolhapur, Baroda, Belgaum and Poona will no longer be associated with the Bombay University and the activities of the Bombay Training College will have to be considerably expanded, if it is to provide the teachers for the City of Bombay and its neighbourhood. It is only in the atmosphere of a University that advanced work for the M.Ed. and Ph. D. degrees in Education will be possible. The establishment of a Department of Experimental Psychology in association with advanced work in Education should be of mutual benefit. Whether there should be a Training Institute for Physical Education along with the Training College or not is a matter for further consideration. The Institute at Kandivli is doing good work and the University may not like to take up this work unless the need for more physical instructors is experienced by the colleges of the University.

(*v*) *Constituent Colleges.*—While the teaching activities of the University are expanded along these lines, some of the older colleges like Wilson College and St. Xavier's College should be encouraged to continue and strengthen the post-graduate work that they had been so far doing. We cannot say now which of the newer colleges will be able to undertake more advanced work than they are doing at present. It may be necessary for them to consolidate their position and make better provision for the residence and health of students before they expand their teaching activities. The enrolment in some of these colleges has already reached unmanageable proportions; and if the recommendations suggested in our previous chapters

regarding three-year degree courses are carried out the resources of these colleges will be taxed still further. In order to reduce these large numbers the University will have to approach the Government to devise ways and means for diverting many of these students to vocational institutions. If the demand for general education continues to be as strong as it is today even after the opening of such institutions the University will have to think of the starting in different localities of new colleges with proper endowments. What is most necessary, however, is that the new institutions should not be allowed to grow sporadically but should be the products of careful planning on the part of the University. We regret to note that this has not always been done in the past : colleges have been started without adequate financial strength and without attention being paid to the needs of the locality. We found that the conditions imposed on institutions at the time of affiliation were not observed either in letter or in spirit. A University Grants Committee on the lines suggested by us if adopted by Bombay, will enable the University to enforce the conditions of affiliation more strictly.

(*vi*) *The System of Elections.*—The changes suggested for improving the administrative structure of teaching and federative universities should apply to the Bombay University. Democratic elections to university bodies have not been productive of unmixed good and criticisms against the formation of the Senate, the Faculties and other academic bodies through such methods of elections have been made by people with considerable experience of the affairs of the University. It is hoped however that these shortcomings will be considerably reduced if not removed, by the adoption of the measures which have been suggested in our preceding chapters.

III.—Madras University.

17. *The establishment of the University.*—The University of Madras was incorporated by Act XXVII of 1857 with a constitution similar to those of the Universities of Calcutta and Bombay. Sir Christopher Rawlinson was the first Vice-Chancellor and the two first Indian Members of the Senate were P.S. Naidu and C.R. Shastri. The main work of the University was to ascertain by means of examinations the proficiency of persons in Literature or the Sciences. The degree course consisted of the following three subjects :--

(1) English ;

(2) A Classical or a Modern Language ; and

(3) One of the following subjects :—

Mathematics, Physical Science, Natural Science, Philosopy and History.

18. *Changes introduced by the Acts of 1904 and 1923.*—The Universities Act of 1904 made the same changes in the constitution of Madras University as in those of Bombay and Calcutta. The composition of the Senate and the Syndicate followed the lines laid down by this Act. Section 3 of the Act provided for the appointment of University Professors and Lecturers and the promotion of study and research by the universities ; but not much appears to have been done to implement this section till 1923 when the constitution of the University was amended by another Act. The preamble of this Act enunciated its object as follows :—

(*i*) To establish a teaching and residential university at Madras while enabling the university to continue to exercise due control over the quality of teaching given by constituent or affiliated colleges ;

(*ii*) To foster the development of academic life and corporate unity in colleges as well as the university with a view to utilizing fully the available teaching resources ; and

(*iii*) To prepare for the incorporation of new universities by co-ordination and concentration of the resources for higher teaching and research at suitable centres.

Under this Act the authorities of the University were :—

(1) The Senate ;

(2) The Syndicate ;

(3) The Academic Council ;

(4) The Faculties ;

(5) The Boards of Studies ;

(6) The Council of Affiliated Colleges ; and

(7) Such other authorities as were declared to be so by the Statutes. The Governor-General was to be the Visitor of the University, the Governor of Madras the Chancellor, the Minister of Education the Pro-Vice-Chancellor. The Vice-Chancellor was to be a whole-time paid officer appointed by the Chancellor on the recommendation of the Senate. Certain minor alterations were made by the amending Act of 1929 and the Government of India Orders of 1937 and 40, while other changes have been introduced in 1942 and 1943.

19. *Development from 1923 to 1947.*—During the last quarter of a century the Madras University has undertaken teaching work in various subjects, such as Botany, Zoology, Biochemistry, Mathematics, Indian Philosophy, History, Geography and Oriental Languages.

The main work of teaching for the intermediate and the degree courses has, however, continued to be done by the colleges recognised by the University. These colleges are classified as constituent or affiliated according to their geographical situation, those in the city of Madras falling in the first category and those outside in the second. Provision for the instruction of Honours students is made in some of the affiliated colleges, but the bulk of the work is done in the city of Madras. Thus one of the aims of the 1923 Act, the establishment of new universities by the concentration of resources for teaching and research at suitable centres, has not been carried out, except for the establishment of Andhra, Annamalai and Travancore Universities.

20. *The future* : (*i*) *The Recommendations of the General Inspection Commission of 1947*.—The Report of the General Inspection Commission of 1947 considered the problems of the development of collegiate education.

(*a*) *Number of students in colleges*.—The number of students in an individual college should not ordinarily exceed 1,000 and only in exceptional cases might go up to 1,250. In order that the students who have taken the School Leaving Certificates may continue their studies, it is necessary to have more colleges providing for university courses of study as well as polytechnics and similar institutions. After the intermediate stage some students will pursue professional courses in Engineering, Agriculture, Veterinary Science, Medicine etc., and attempts have to be made to arrange for the training of more students in professional courses through the establishment of new colleges.

(*b*) *Starting of new Colleges*.—General principles for the starting of new colleges :

Concentration of colleges in a few large towns is not the best method of providing higher education for these increasing numbers. Educational facilities should be spread out more widely, so that students are not compelled to flock to the larger towns for the purpose of ordinary graduation. There should be one or more colleges in every district, the number depending upon the number of high schools and the number of students seeking admission to colleges. One may note the condition laid down by the syndicate for the affiliation of new colleges to the degree standard that they should each show an endowment of Rs. 500,000 yielding an annual income of fifteen thousand rupees. There should be a planned method of expansion integrating the preliminary stage with the highest stage of educational development ; and it should be the duty of educational authorities to keep note of the number of students passing out of

High Schools every year and plan facilities for their further education in the University and in suitable alternative institutions. The opening of every new High School should be followed up by a scheme to provide further education for some of those passing out of it.

(*c*) *New subjects of study.*—Provision has to be made not only for the study of the subjects in the older curricula but for new ones like Commerce for which there is great demand. Other new courses which will expand the university sphere of work are Geography, Home Science, Music and Nursing. Fresh courses of study have to be instituted from time to time and these " should take into account any new trends for this and other countries and the requirements of the country in the sphere of industrial expansion, trade and commerce, administration and scientific advancements ".

(*d*) *Honours studies.*—With regard to Honours courses the Inspection Commission recommended that they should be mainly concentrated within the city of Madras. The University should encourage "and facilitate co-operative teaching between the colleges themselves and the colleges and the universities. This would enable colleges to specialise in any particular subjects and would make available to the students of Honours classes a higher standard of teaching and a greater choice of special subjects ".

(*ii*) *Plans for the Reorganisation of the Presidency College.*—Government colleges in Madras have always been in a category different from other colleges. The subsidies from the Government have enabled them to offer higher salaries and greater security to the teachers who have also had a smaller number of pupils to look after. While in an institution like the Pachaiyappa's College, Madras,the expenditure on nearly 2000 students amounts to about Rs. 300,000 (more than 75% of which is realised as fees from students) the expenditure on the Presidency College with less than 1,500 students has been about Rs. 400,000. The Madras Government set up a Committee last year to report on the possibilities of developing the college as an institution for higher teaching and research and to suggest ways and means for it. This Committee under the distinguished chairmanship of Professor C.V. Raman recommended that it should be administered by a Governing Body on behalf of the Government and manned by Professors and Lecturers of high calibre. The Intermediate classes in the college were to be abolished and the B.A., B.Sc., retained for really meritorious students. Classifying the branches of study under the heads of Physical Science, Natural Science, Linguistics, Mathematical and Social studies they recommended the formation of 24 independent departments, each manned by one professor, two assistant professors

one research fellow, one senior scholar and two junior scholars. Details regarding the stages of the transformation of the college into an institution for higher studies have been set out in detail and proper emphasis has been laid on co-operation with the University and with the other colleges. Referring to the arrangements proposed by the University for undertaking systematic teaching leading up to M.A. and M.Sc. degrees the Committee observed :—

> " The Presidency College should, we feel, give the warmest support to this move, since it is calculated to place University teaching on the highest level possible with the existing personnel. We would suggest also that in appropriate cases, the Governing Body of the Presidency College might find it of advantage to secure the services of teachers of other Colleges in the Madras area, on a part-time salaried basis, for participation in higher teaching and research in its own departments of study. "

We would like to emphasise the need for co-operation between this institution and the University. Steps have to be taken to ensure that there is no unnecessary duplication of work between the University departments and those in the Presidency College. This danger would be completely avoided if the control of the college were vested in the University and it is for the Government to consider whether an independent Governing Body will be more conducive to the smooth working of the institution. One would naturally expect the University to be in charge of all post-graduate teaching and advanced research in Arts and Sciences at the University centre.

(*iii*) *Development of Professional Colleges.*—The Inspection Commission suggested the expansion of opportunities for professional education. A few Engineering Colleges have already been started and it is for the University to ensure that each college does not become simply a replica of another, and that in some of these institutions attention is paid to those branches of engineering which have so far been neglected. The province requires many more medical men and new colleges will have to be started in the near future in different zones of the province. Fresh institutions for the study of Agriculture, Forestry and Veterinary Science should be established according to the needs of the province ; nor should research in professional studies be neglected. The provision of facilities and funds for such professional institutions has to be planned and provided by the State as private enterprise will not be able to do anything substantial in this direction.

IV.—Allahabad University

21. *Development of the University from 1887 to 1921.*—Act XVIII of 1887 which incorporated the University of Allahabad had provisions which were slightly different from those of the older universities and might have been utilized for making the University, at least partly, a teaching one. In actual practice the University confined itself to prescribing courses of study in affiliated institutions and conducting examinations for them. Discussing the provisions of the Indian Universities Act of 1904 Gokhale observed that the Allahabad University had possessed powers of teaching for 16 years and had never undertaken those functions. The reason for this was lack of funds or as he put it, " as there is no reason to assume, private liberality will flow in this direction after the bill becomes law and Government will not provide the resources necessary for the purpose, these enabling clauses (for exercising functions of teaching) are, as in the case of Allahabad, destined to remain a dead letter for a long time to come ". This criticism seems to have produced some effect and the first grant to the universities was announced in 1904-05 and in 1911-12 the share of Allahabad out of total recurring grant to the universities was Rs. 85,000 a year. This was in addition to the non-recurring grants of which during 1912-17 Allahabad received Rs. 5 lakhs. These grants enabled the University to make a beginning with some teaching departments and those of Law, History and Economics were the first to be started. The main work of the University was however, with its affiliated colleges and the conducting of the examinations from the Matriculation upwards.

22. *Changes in this University after 1921.*—The Allahabad University Act of 1921 remodelled the University " with a view to establishing a unitary, teaching and residential university at Allahabad ". The Intermediate classes were removed from the University and the Intermediate examination became the entrance examination for the University. The University retained its powers of affiliation of institutions outside Allahabad in the United Provinces as also in the Central Provinces, Central India and Gwalior. This jurisdiction was restricted in 1923 with the incorporation of the Nagpur University for the Central Provinces and further restricted in 1927, with the establishment of the Agra University which entirely took over the affiliating functions of the Allahabad University. In 1927 the Allahabad University became a purely unitary teaching university.

During the last 20 years the University has considerably expanded its activities through the introduction of new branches of study and increase in the number of students. In 1928 the University

had about 1,500 students ; in 1937, 2,100, in 1943, 2,500 and in 1948, 4,100. The increase in the number of students and in the branches of study has naturally entailed additional expenditure which could not always be recouped from fees and government grant. The economic inflation of the last few years had also added to the troubles of the University as it had to pay allowances to its employees without getting them reimbursed by the Government. In spite of the best efforts of the University to recruit and retain teachers of the highest calibre, a good many of the members of the staff have been tempted by more attractive emoluments from outside and the work of the University has suffered in consequence.

The University Library possesses about 1,40,000 volumes but its expansion has been retarded on account of the limited amount allocated to it annually, and research work, in particular, has been handicapped. The number and amount of research scholarships and fellowships have not been very helpful for fostering as much of original work in the University as they should have done.

23. *Plans for the Future.*—Still the Allahabad University has as distinguished a record for original work as many other universities and it has trained students of high intellectual calibre who now occupy some of the highest posts in our public services. But it has been seriously handicapped through lack of adequate funds.

(*i*) *Additional Accommodation.*—Academic work has suffered as the staff has not expanded in proportion to the increase of the number of students and the accommodation in the teaching blocks is now extremely cramped.

(*ii*) *Honours Courses.*—If the University is to fulfil its functions properly, the classes for lectures have to be smaller, the tutorial work made more real and the Honours courses, which were discontinued some years ago have to be re-started. These latter were not popular on account of the Pass courses extending to two years and Honours to three years. If our recommendations with regard to Pass and Honours courses are followed, it should not be difficult to re-organize Honours courses on a satisfactory foundation.

(*iii*) *Additional Scholarships.*—We have already emphasised the need for additional and better scholarships in our universities. In a purely teaching university this need is felt more than elsewhere as it attracts better students from other centres and education is more expensive than in an affiliated college.

The amount available for university scholarships has to be substantially increased. It has been suggested that a high percentage of failures in public examinations, for which there is less excuse in a

teaching university than in an affiliating one, is at least partly due to the poverty of the students which compels them to undertake all kinds of work to maintain themselves in the university. In addition to the scholarships for the under-graduates and for those working for the Master's degree provision has to be made for fellowships and research scholarships in selected subjects.

(*iv*) *Co-ordination of Higher Studies.*—The Government of the United Provinces is maintaining two teaching universities in addition to giving some aid to two other teaching universities. It is obvious that some planning and co-ordination of higher work is necessary for these universities. While all these universities would be giving instruction in similar courses up to the Master's degree, research laboratories and library equipment cannot be duplicated in highly specialized fields of knowledge. It is difficult to say in which particular branches of knowledge Allahabad should specialize as that depends to a great extent upon the senior teachers of the University, but from its past record one may suggest that Allahabad can build up strong schools of Mediaeval History, Metaphysics, and some branches of Physics and Chemistry. It does not preclude the development of research in other subjects like Political and Biological Sciences and it will be for the University to decide in what directions it can most profitably utilize the funds placed at its disposal for the advancement of knowledge.

V.—Mysore University.

24. *Establishment of the University.*—The Mysore University was established in 1916 as part of the many-sided schemes of cultural and material advancement of the State. The constitution of the University set up by the Act of 1916 was amended in 1933 and 1939 so as to make the Senate more representative of public life and establish an Academic Council responsible for the academic organization of the University. The University serves an area of 30,000 sq. miles which has a population of over 8 millions. It was intended to be a teaching and affiliating university, its teaching activities being mainly concentrated at Mysore and Bangalore. The Government of Mysore took the entire responsibility for the financial and administrative management of the University.

25. *Its work from 1916 to 1949.*—The University has developed considerably during these 33 years. It started with only two colleges and to-day it has 26 colleges, 17 of which are described as colleges of the University and 9 as affiliated colleges. In 1916 there were only 2 Faculties, those of Arts and Science. The College of Engineering was added a year later and the Medical College started

work in Bangalore in 1924 and was later transferred to Mysore. In 1917 only 40 students were enrolled in the Engineering College for being trained as Civil and Mechanical Engineers and in 1948 there were 1,238 students doing engineering. The Department of Electrical Engineering was started in 1925 and that of Chemical Engineering in 1945. The Medical College which started with an intake of 30 per year now admits 50 and there have been numerous additions to the hostel and teaching blocks. An Agricultural College and a Teachers' Training College were recently started and opportunities for women's education have been greatly expanded. The number of women students has increased from a handful in 1916 to over a thousand in 1948. The University has a staff of over 600 teachers of different grades providing a fairly satisfactory pupil-teacher ratio and a fair amount of research work has been carried on during the last 30 years. There are arrangements for tutorial work, physical education (which is compulsory for Intermediate students) military training, games and athletics. A note-worthy feature of the activities of the University is the extension work which aims at diffusing knowledge among that section of the people which is not able to participate in the regular university courses. There is, in addition, an Adult Literacy Campaign originally launched by the Mysore University Union.

This expansion of university activities has not been fully conducive to the promotion of the original ideals of the University. With the majority of Arts and Science students in the affiliated colleges the atmosphere of the teaching university has been gradually receding to the background. Economic considerations too have been partly responsible for this. Being a resident student in a constituent college is much more expensive than being a day scholar in an affiliated college and hence many meritorious students have had to go for their education to the latter institutions rather than to the former. Again, the constituent colleges have not been able to maintain their high standards of teaching and research on account of inadequate salaries offered to even senior members of the staff and it has been suggested by some, on account of the non-academic criteria for appointments to the staff. The fact that the University is a department of the Government has been to some extent responsible for this.

26. *Plans for the Future.*—(*i*) *Change of Administration and Grants for the University.*—The University has been more fortunate than others in having enjoyed State support for all its activities. Government grants have been steadily increasing in order to keep pace with the instruction of a larger number of students and dis-

semination of college education all over the State. In 1946-47 the Government grant was 17 lakhs and in 1948-49 it was Rs. 34,46,000. But it cannot continue to be administered as a State department and the structure of administration should follow the lines recommended by us. The change of administration may lead to financial difficulties and to obviate this the University must have a permanent endowment fund. In addition there should be a block grant placed at the disposal of the University. This will enable the University to provide funds for its most urgent needs.

(a) *Additional 'merit' Scholarships.*—The provision of merit scholarships on a more generous scale is essential ; at present there are only 70 'merit' and 'ordinary' scholarships as against about 1,600 scholarships for backward and depressed classes. The amount of each of the former scholarships is about Rs. 80 or Rs. 120 annually in addition to exemption from the payment of tuition fees. These open scholarships have to be multiplied many times and the amount increased according to our recommendations in Chapter XI.

(b) *Additional Residential Accommodation.*—According to the figures supplied to us a very small percentage of the university students is resident in university hostels. This may be partly due to the fact that most of the students come from the city, but it is difficult to believe that if larger accommodation for residence had been provided, more students would not have liked to take advantage of the residential system. As the enrolment in the University is increasing hostel accommodation has to be expanded. Sectional hostels should be abolished.

(c) *Specialisation.*—While a certain amount of research work is being done it is up to the University to plan specialisation in some fields of knowledge.

(A) *Oriental Studies.*—In the Oriental Institute the University has an excellent centre for advanced work. We do not know what action has been taken on the Report of the Committee for the Reorganisation of the Institute which recommended collection of more manuscripts and rare works bearing on oriental culture, preparation of typical bibliographies and publication of ancient texts based upon manuscripts. The university students in Sanskrit and Kannada will be trained in scientific methods of research and should co-operate not only in the publication of these texts but bring out translations of monographs on the works which are at present unknown to scholars outside. Thus by pooling together the resources of the Sanskrit and Kannada departments of the Maharaja's College, the Sanskrit College, the Oriental Manuscripts Library and the Archaeological Department, an excellent school of Oriental Studies may be developed at this centre.

(B) *Psychology.*—The Maharajah's College has a well-equipped Department of Psychology, a branch of knowledge which has been comparatively neglected in Indian Universities. Mysore may become a centre of work in experimental and theoretical Psychology with the aid of the competent scholars at present in the Department and the addition of others who will help to build up an Institute of Psychology in the University.

(*d*) *Professors and Laboratories.*—The laboratories in the Central College require to be adequately equipped to facilitate original work by professors. But research work will depend mainly upon the calibre of men at the top. The salary scales of the teaching staff have to be generously revised and outstanding men appointed to University Chairs solely on academic considerations. There must at the same time be closer co-operation between the Central College and the Institute of Science in those branches of study which are common to the two institutions.

(*ii*) *Arrangements for Secondary Education.*—More than half of the students of the University are in the Intermediate classes in Arts and Science. According to our recommendations they will be removed from the control of the University and placed under a separate organisation on which the University would be adequately represented. At present students are asked to specialize much too early ; secondary education must mean a balanced education for all.

(*iii*) *Affiliation of Colleges*—Rules regarding affiliation of colleges are not at present sufficiently stringent. Private colleges are necessary to meet the increasing demands for education but the University has to be sure of the financial stability and academic soundness of the new institutions according to principles enunciated in an earlier chapter. Colleges should not be opened in different places merely on small donations prompted by local patriotism.

(*iv*) *The Responsibilities of the Vice-Chancellor.*—The new non-official Vice-Chancellor will have a heavier burden of work than elsewhere because the machinery of administration will have to be remodelled. Sufficient care should be taken to choose a really outstanding man for this work and give him adequate help to carry out the task entrusted to him.

VI.—Patna University.

27. *Establishment of the University : the Act of 1917.*—The aim of the Patna University Act was to provide the new province of Bihar and Orissa with a university which was to be mainly residential and teaching. There were, however, some colleges in other parts of the province and local feeling was in favour of retaining these institutions. Hence it was decided that the university should affiliate colleges

situated at centres other than Patna. The Committee which formulated the university scheme proposed a central university where six colleges including three existing (Patna, Bihar National and Training Colleges) and three new ones should be erected on a site near the capital. The external colleges were to be limited at least for the time being to the four first grade institutions outside Patna. Some of these proposals were modified and the Act of 1917 which incorporated the University retained the idea of a central university site just outside Patna but suggested that one of the existing colleges was to be kept up in the city as a non-residential institution. It was proposed to modify the administrative structure of the university in a vital fashion, the Government being deprived of some of its powers of affiliation and disaffiliation and popular control enhanced through the increase of the elected element in the Senate. The University started as a purely affiliating one but retained the ideal that Patna would eventually emerge as a truly centralized university through the separation from it of the other centres when their collegiate institutions were sufficiently strong to work as independent entities.

28 *Development from 1917 to 1949*.—During the period which has elapsed since the establishment of the University not much has been done towards the realization of the ideal. Patna remained a purely affiliating university until the establishment within the last four years of several university professorships and departments of study. The departments of Psychology and Geology were the first two to be established and they have been followed by that of Political Science. Still the amount of teaching carried on by the University is small and might be described as of no great significance when compared with the advanced work which is being done in the two Government institutions in the immediate neighbourhood. The Patna College has an honourable past having been established in the early sixties of the last century. Its Science Departments were separated and they formed the nucleus of a new institution started in 1927 and maintained by the Government. The Patna College has provision for post-graduate studies in most of the usual Arts subjects, while the Science College provides for post-graduate training in Mathematics, Physics, Chemistry, Botany and Zoology. The total expenditure on the Patna College in 1947-48 was about Rs. 3,50,000, while that on the Science College was Rs. 4,17,000. These institutions have good buildings, fairly adequate hostel accommodation, library and laboratory equipment of requisite standards and grounds for further extension. The possibilities of the development of the teaching activities of the University are limited if it is retained in its present site. The Psychology Department could acquire suitable accommodation only through the generosity of late Sir Ganesh Dutt Singh.

29. *Plans for the Future.—(i) Development of Teaching Activities.*—The University has to develop itsteaching activities whatever may be the difficulties in the way. It has functioned as an affiliating and examining body for three decades without becoming a centre of knowledge and research as it should have been. If financial considerations prevent the execution of the original plan of a centralized university on the Phulwari or any other site, efforts have to be made to change the character of the University in a more economical way.

(*ii*) *Position of the Patna and the Science Colleges.*—There is no reason why the Patna College and the Science College with their high expenditure per student should retain their Intermediate classes. Provision for these latter should be made according to our recommendations in the preceding chapters. It may not be necessary to retain the B.A. Pass classes in the Patna College, though on account of the difficulties of accommodation in the laboratories, Pass B.Sc. classes may have to be continued in the Science College for a few years ; but the amount of money (about 8 lakhs annually) which is at present being spent at these two institutions will be properly utilized if they are devoted solely for Honours and higher studies. If however the colleges continued to be administered by the Government the University will find it difficult to expand its activities. These two colleges have to be University Colleges in the true sense of the term and should serve as the nucleii of the post-graduate work of the University. Without a co-ordination of all higher work and the pooling of resources it will not be possible for the University to become the intellectual focus of the province.

(*iii*) *B. N. College and the Women's College.*—The position of the Bihar National College and the Women's College is somewhat anomalous and they may have to continue their work as under-graduate constituent colleges of the University.

(*iv*) *Professional Colleges.*—The professional colleges will naturally carry on their work as they have been doing though it is hoped that the Government will make plans for the professional training of more students at the university level and, what is more important, for the starting of Occupational Institutes for Matriculates so as to divert a good many of the students who would otherwise come to study in an Arts or Science College.

(*v*) *Administrative Structure.*—The administrative structure of the University will have to be substantially altered with the strengthening of its teaching activities and the university professors should have their proper representation on the Senate and the Syndicate. The external colleges will carry on their present work though Mithila and Chota Nagpur may have their universities in the not very distant future.

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(*vi*) *The New Bill.*—The Pataliputra Vishwavidyalaya Bill, 1949, contains proposals for the establishment of a teaching university at Patna which will be an organization entirely distinct from the affiliating University of Patna, though for a period of transition the two may have to use the same administrative buildings. We are not in favour of a purely affiliating university without any arrangements for teaching work. If the University has teaching functions in addition to those of affiliation, the teachers of the University should be recruited on grounds of academic work and not simply on service considerations.

XII.—Osmania University.

(Hyderabad-Deccan)

30. *Establishment of the University.*—Higher education in Hyderabad was controlled by the Madras University for more than half a century and it was in 1917 that Sir Akbar Hydari, the then Education Secretary of the State, submitted a memorandum to the Nizam formulating the plan for a university. He brought out the disadvantages of imparting instruction through a foreign medium and recommended the establishment of a teaching and examining university in which Urdu was to be the medium of instruction and examination. The University would have to provide the necessary books through translations and compilations and at the same time ensure for all students an adequate knowledge of the English language. The Osmania University was established by a Charter in 1918 and an important feature of the University was the Bureau of Translation with a large staff of qualified translators.

The constitution of the University differed from that of the older universities in having a Council (which is the highest governing body of the University) in addition to the Senate, Syndicate and Faculties. The University was mainly a teaching one but allowed some outside colleges to send up candidates for its lower examinations. A Medical College was opened in 1927 and an Engineering College as also a Teachers' Training College in 1929.

31. *Work from 1918-1948.*—During this period the University has been suitably located in a campus outside the city, the buildings having been carefully planned and executed. The facilities for lecture-rooms and residence are such as are not easily found elsewhere in India. The Medical College and the Women's College remain in their old buildings as also the Nizam's College recently transferred from

the Madras University. The Bureau of Translation has published about five hundred books required by students in the Intermediate, B.A. and LL.B. Classes

While praise is due for the achievements of the University one has also to note the shortcomings :—

(1) The University has been administered by the State almost as a Government Department : the administrative officers of the University have been chosen and transferred according to the exigencies of State administration as a whole. (2) The work of the Bureau of Translation has not been very satisfactory on account of the time taken in translating original works and seeing them through the press. In the Sciences and even in subjects like Economics and Political Science this delay has made the translations lose a good deal of their utility. (3) The medium of instruction was the official language of the State but it was not the mother-tongue of the majority of the people who spoke Marathi, Telugu or Canarese. Many of the latter preferred to study at the Nizam's College which until recently trained students for the Madras University examinations.

32. *Plans for the Future.*—The political changes in the State are bound to have repercussions on the University.

(*i*) *The University to be Autonomous.*—The first thing to be done is to make the University an autonomous body and to regard the University employees not as Government servants but as entirely under the control of the University. The methods of recruitment and conditions of service should thus follow the general lines indicated in the earlier chapters.

(*ii*) *Medium of Instruction.*—The language problem will have to be solved according to our general recommendations on the medium of instruction and the activities of the Bureau re-oriented accordingly.

(*iii*) *Women's College and Medical College.*—Some other changes are necessary in the general make-up of the University. The Women's College has to be housed in proper buildings even if it cannot be shifted to the University campus. The Medical College has outgrown its present accommodation ; a new Hospital and a new teaching block on a suitable site are urgently necessary.

(*iv*) *Needs of Science Departments.*—The Science Departments have to be better manned and equipped. The University has an advantage over others in the buildings it possesses : it has now to see that they are put to the best possible use. The Intermediate students will naturally have their education in other institutions.

[1] See Chapter IX.

(v) *Honours Courses.*—The University has so far had no Honours courses which should be properly organized in Arts and Science subjects. For the ordinary degrees the integrated courses suggested in an earlier chapter will be easier to manage on account of the compact nature of the campus and the unified organization of the institution.

(vi) *Research Work.*—The University has been making efforts to develop research work. We are not sure if the setting up of a separate organization for directing research is necessary. It has already been pointed out that university work in any department cannot achieve its purpose unless the teachers are engaged in original work and have part of their time occupied with the supervision of the research work of advanced students. There cannot be any separation between teaching and research and the University has to arrange for proper research facilities in all departments of study through the strengthening of the library and the laboratories, through the institution of Fellowships and through relieving those capable of original work of a part of their routine teaching work. In doing so the University should not forget the necessity for research in Applied Sciences and in the professional Faculties just as much as in the Humanities and the Basic Sciences.

VIII.—Lucknow University.

33. *Work since its establishment.*—Proposals for the establishment of a university at Lucknow were discussed by several Sub-Committees in 1919 and 1920 and the draft bill was introduced in the Legislative Council in August, 1920. The University was incorporated under Act No. V of 1920 and it took over the administration of the Canning College and the Medical College. It became a unitary teaching and residential university with the Intermediate examination as the qualifying test for entrance to the University, the jurisdiction of which extended to a radius of 10 miles from Lucknow. The teaching work was divided under the Faculties of Arts, Science, Commerce, Law and Medicine, and Colleges and Halls were to be the units of residence. The University started functioning in 1921 with an enrolment of 632 students. In 1927 the number of students was 1,448, in 1937, 2,340 and in 1948, 4,547. The branches of study have also been increased during these years with the introduction of new ones like, Psychology, Education, Asian Culture and Civilization, Military Science, Geology and Geography. Honours courses were introduced in practically every subject in the Arts and Science Faculties but they never became popular and are now carried on only nominally.

Research work has been fostered in most departments and a number of students admitted to doctorates every year. The publications of the teachers and the students have been recognised by competent scholars as contributions to knowledge. The workers have however complained of the following disabilities :—

1. Insufficiency of research scholarships and fellowships : there are very few of these and these are on a very meagre scale ;
2. The poverty of the University Library which has now about 90,000 volumes but the resources of which are not sufficient to provide material for all the research students ;
3. Lack of accommodation and equipment in the laboratories.

Cramped accommodation has been the target of criticism in every Faculty and even with the addition of new buildings and improvised rooms in the old ones, the University is not able to provide sufficient class rooms either for lectures or for tutorial work. Hostel accommodation too is insufficient and rooms which were intended for one student have been made to house two, causing inconvenience to the students and introducing insanitary conditions in the University campus through overcrowding.

Only a small percentage of the total number of students in the Faculties of Arts, Science, Commerce and Law is resident in hostels and the others live either with parents or in lodgings which are not properly supervised. The non-resident students do not have the advantages of corporate life which a teaching university ought to provide and hence the University attempted a few years back to organise a number of social centres in the city, but this was not productive of the good which had been anticipated and the scheme has now been given up. Efforts have been made to organise athletics and sports on an efficient basis but not with the amount of success which the University authorities desired to have.

A distinctive feature of the work of the University has been the Faculty of Medicine which is an integral part of the teaching University. No other university in India is directly responsible for the administration of a Medical College, and Lucknow has had to experience some difficulties in running its hospital and college. These have been due to the conditions of service of the teachers, most of whom are allowed consultation practice, the large number of admissions which the University had to make without arranging for proper teaching and hospital accommodation and the constant contact with the public through an ever-increasing number of patients seeking admission to the hospitals. The working of the Medical

Faculty as a part of the University has naturally led to some attention being paid to research work but the amount of research has not been up to the level of expectation.

Pressure of laboratory accommodation led the University to allow B.Sc. classes to be added to some of the Intermediate colleges in the city, while there are three women's colleges offering instruction up to the B.A. degree. The existence of these colleges may not be strictly consistent with the constitution of a unitary university but the desire for higher education in almost every student passing the Intermediate examination has led to the adoption of these steps.

34. *Plans for the future.*—Need for additional grants to satisfy the following requirements is great. During the last few years the University has had great financial difficulties because the Government grant was not adequately increased to meet the needs of extra numbers of new subjects of study and of inflated economy. Whatever has been said about the difficulties of Allahabad University in attracting and retaining sufficiently qualified people on the staff and about the co-ordination of research work with other universities for increasing efficiency holds good of Lucknow as well. The immediate needs of the University are as follows :—

(*i*) *Concentration on higher work.*—In the Faculties of Arts and Science the University should confine itself mainly to Honours and M.A. teaching in addition to research work. With the introduction of the three-year B.A. and B.Sc. courses, it will be impossible for the University to cater for the large number of students who will have to be trained for the ordinary B.A. degree. This latter responsibility may be handed over to the more efficient Intermediate colleges of the city but Science teaching may have to be concentrated at the University because it has been found from experience that the present Intermediate colleges are not able to make adequate provision for B.Sc. teaching.

(*ii*) *Effective Honours courses.*—The Honours courses have to be real ones and it is hoped that the best students will be attracted to Honours when the duration of Honours and Pass courses is the same.

(*iii*) *Additional accommodation.*—Accommodation for teaching and hostels has to be substantially increased.

(*iv*) *Better tutorial instruction.*—Tutorial instruction has to be made more efficient according to our recommendations in Chapter IV.

(*v*) *Library.*—To facilitate the work of research scholars the library must have substantial additional grants.

(*vi*) *Scholarships and Fellowships.*—The number and amount of scholarships and fellowships should be substantially increased ;

(*vii*) *Research Work in the Medical Faculty.*—Conditions of service in the Medical Faculty have to be altered according to our recommendations on higher medical education so as to induce the teachers to devote their spare time to research. There is considerable scope for research in a University Medical College not only in the departments of Physiology, Anatomy and Pharmacology but also in clinical subjects like Medicine, Surgery and Opthalmology.

IX.—Nagpur University.

35. *Establishment of the University.*—The colleges in the Central Provinces were affiliated to the Allahabad University and the first attempt to have a separate university for the Province was made in 1914 when the local Government appointed a committee to consider the question. The report which was submitted next year embodied an elaborate scheme for a university which would combine teaching with the powers of affiliation. Action on the report was postponed on account of the Great War and in 1919 a new Committee was appointed after the publication of the report of the Calcutta University Commission. The recommendations of the Committee were embodied in the bill which was introduced in the C. P. Legislative Council in 1922 and passed in 1923. The University started functioning on 4th August 1923.

36. *Functions of the University.*—The Act gives the University the power :—

1. To provide for instruction and make provision for research ;

2. To hold examinations and confer degrees ;

3. To inspect and affiliate colleges and hostels as also to maintain them and to exercise other functions which are generally assigned to universities which combine the work of teaching and affiliation.

37. *Work of the University from 1923 to 1949.*—During these years the University has not developed its work of teaching as it might have done. The generosity of Mr. Laxminarayan of Kamptee who bequeathed about 35 lakhs to the University for the teaching of Applied Science and Chemistry enabled the University to start an Institute named after him. Other branches of knowledge in which the University provides instruction are Education, Law, Political Science, Geology and Bio-Chemistry. The University however, has been mainly engaged in supervising its affiliated college, and in conducting examinations. In 1946-1947 it had only about 60 students in the university classes, 590 in the constituent colleges

and about 5,000 in the affiliated colleges. The establishment of the University of Saugor in 1946 reduced the jurisdiction of the University and the number of affiliated colleges. With the reduction of its work of affiliation the University has greater opportunities for expanding its activities as a teaching and residential university.

38. *Plans for the Future.*—(*i*) *Position of Government Colleges.*—Among the colleges affiliated to the University three (the Nagpur Mahavidyalaya, the Vidarbha Mahavidyalaya and the Science College) are maintained by the provincial Government. The contribution of the provincial Government to the first institution amounts to about Rs. 2,25,000 a year and to the Science College a larger amount.

While the Government Colleges have been doing good work for many years (the Nagpur Mahavidyalaya was started in 1885) a good deal of their work is with the Intermediate and the B. A. Pass classes. In the Nagpur Mahavidyalaya for example, about 45 per cent of the total enrolment in 1948-49 was made up of the Intermediate students.

The work done in the Government Colleges should be better than that in the private colleges because the teachers are better paid and have a greater security of tenure, but they are liable to be transferred from one institution to another and sometimes from the work of teaching to the Inspectorate. Some of these transfers are described as of a routine nature and some are intended to offer higher emoluments to the officers. In any case the work of teaching institutions is dislocated thereby and in the Science College there are far too many temporary teachers who have been recently recruited. The expansion of the teaching side of the University can be effective only with the help of the staff and equipment of the two Government institutions at Nagpur, and it is for the Government to see how post-graduate and research work can be carried on at Nagpur under the most favourable conditions. Plans similar to those suggested in Madras for the Presidency College may be adopted for the Nagpur Mahavidyalaya and the Science College with some modifications which would obviate the chances of any conflict between the University and the Government.

(*ii*) *Laxminarayan Institute.*—There is ample opportunity for co-ordinating the work of the Science College with that in the Laxminarayan Institute and it is hoped that there will be no duplication in the work of the two institutions. Few universities in India have had such generous donations from one individual as the Nagpur University had and it is for the Government to see that adequate

help is given to the University to utilize the bequest in the most satisfactory fashion and build up a great centre of teaching and research in the Basic and Applied Sciences.

X.—*Andhra University.*

39. *The University since its Inception.*—The desire of the Telugu-speaking districts of the Madras Presidency to have a university had been vocal for a number of years before the University actually came into existence. The Senate of the Madras University accepted in 1920 the principle that each linguistic area of the province should be provided with a university. From 1921-22 a Committee discussed a proposal for the establishment of an Andhra University and recommended the establishment of a unitary and residential university providing opportunities especially for higher technical education. The University was incorporated by an Act of 1926 with jurisdiction over the Telugu-speaking districts to serve the interest of the Andhras who were proud of their achievements in Art and Architecture, Music and Painting and it was given the functions of both teaching and affiliation. An interesting feature of the Act was the provision for the ultimate use of the Indian languages as the media of instruction and examination.

The location of the University caused some difficulties to the authorities on account of local patriotism. Its first habitation was at Bezwada whence it was transferred to Waltair in 1930. In 1942 consequent on the dislocation caused by war conditions the headquarters were temporarily shifted to Guntur. Four years later the University was moved back to Waltair.

There are four University Colleges of Arts and Commerce, of Law, of Natural Sciences and of Science and Technology. These are really the teaching Faculties of the University and all Honours teaching and research work are concentrated in them. Next, there are six professional colleges, two for medical studies, two for teachers' training and one each for agriculture and engineering. Nine first grade colleges and five second grade ones provide under-graduate instruction in Arts and Science. A distinctive feature of the University is the attention paid to Oriental Studies for which there are eight recognized institutions.

The University was fortunate enough to have some donations and the most generous contribution to the University is of its Pro-Chancellor, the Maharaja of Jeypore. Students' fees do not make any substantial contribution towards university expenses and the Government is responsible largely for the recurring expenditure of the University Colleges.

40. *Plans for the Future.*–(*i*) *Improvement of Salaries and Removal of other difficulties.*—Lack of adequate finances has been the main stumbling block in the way of university progress. In its memorandum the Andhra University says : "We have not been able to recruit, or having recruited to retain the right personnel. Neither the salaries nor the service conditions offered have been sufficiently attractive. The changes in the teaching staffs of our University Colleges are disturbingly frequent". Speaking of the difficulties of research workers the memorandum says : "Lack of facilities, lack of time, lack of proper direction, lack of team work, these are among the causes responsible for our failure to make much headway in research."

The University Colleges have only Honours and research students to look after. It has therefore better opportunities for higher work than other universities. Still the authorities feel that a good deal might have been accomplished under more favourable conditions through more generous grants for the salaries of teachers and scholarships for students and through adequate steps for the recruitment and retention of the right type of men.

(*ii*) *Applied Science and Technology* : *New branches of study.*—The University Department in Applied Science and Technology should be financed by the Government and industry, while those of Pure Science have to be maintained mainly by the former. Marine Biology, Marine Engineering, Electro-Chemistry and Sugar Technology are some of the branches of knowledge for which provision for teaching and research may be conveniently concentrated at the Andhra University, on account of its geographical position, of its ship-building yard and of the industries growing up in the region. Original work on the art and literature of the region allocated to a University is one of its special responsibilities and the study of Telugu literature and language must be concentrated here. The University, however, is not in favour of an artificial sharing of distribution of subjects between the universities as it holds quite rightly that "advanced specialisation is a matter of organic growth round the personality of an individual teacher or researcher of genius". Yet even this factor will lead to co-ordination of higher work in the universities of the Province.

(*iii*) *Maintenance of Standards in Affiliated Institutions.*–Maintenance of standards in the affiliated colleges is one of the main responsibilities of the University. For the professional institutions there may be All-India bodies which would be responsible for preserving the standards of education but for ordinary Arts and Science Colleges, the University has to take its responsibilities seriously and

arrange for the provision of adequate funds and proper utilization of these funds. Periodically, perhaps once in five years, the University will have to send out an Inspection Commission to visit every affiliated institution and submit a detailed report about its working. It may also be necessary to plan the growth of new colleges in such a way as to supply the needs of every district of the Telugu-speaking area.

XI.—Agra University.

41. *Work since Inception.*—The Agra University was established in 1926 to take over the affiliating functions of the Allahabad University and "to provide for instruction in such branches of learning as the University may think fit and to make provision for research and for the advancement and dissemination of knowledge". The University has now been functioning for 22 years and it has not so far tried to exercise the functions of a teaching university in any way. Its exercise of the power of affiliation provides interesting study. There are at present 40 affiliated institutions and 6 others which have been given conditional recognition. Of these only about a third existed in 1939 and not even half existed in 1945. Even the Vice-Chancellor of the University is not quite sure if proper care has been taken about the resources and equipment of every one of the institutions which have been recognised. The actual number of colleges is not excessive, judged by the standards of other provinces especially when we note that the jurisdiction of the Agra University still extends over Ajmer, Gwalior and Indore in addition to the United Provinces. The distribution of students over the colleges is extremely uneven, some of the newer colleges having just a handful of students whereas about half a dozen of the older colleges are frightfully overcrowded.

The annual expenditure of the University is a little over Rs. 4 lakhs in which two items,—remuneration to examiners and travelling allowances,—are responsible for nearly half of the total. This indicates that the main business of the University is to hold meetings of its various authorities and to conduct examinations. Attempts had been made :—

1. to have courses of lectures delivered at various centres by distinguished scholars ;
2. to have a university journal for publishing research work of the university men ;
3. to build up a university library ; and

4. to do other things which would contribute to the extension of the routine work of the colleges. But no progress has been made with any of these efforts.

The elections to the various university bodies have excited a considerable amount of interest because membership of these constitutes almost the only contact of individual teachers with the University. From the point of view of numbers the Agra University has been a large institution but its academic achievement has not in any way been commensurate with either its size or its age.

42. *Plans for the Future.*—No university, we feel, can fulfil its functions if it remains purely an affiliating body. Development of the teaching activities of the University will entail a considerable amount of expense which must be provided by the Provincial Government or the Central Government or both. Some of the colleges have a distinguished record, the beginnings of the Agra College dating back to the early years of the 19th century and of the St. John's College and the Bareilly College to the middle of the 19th century. Some of the other colleges like those at Meerut, Indore and Ajmer are more than half a century old and they can all take pride that some of their alumni were distinguished in various spheres of life. The students of the University in general and of these colleges in particular have a right to expect that there should be the same opportunities for higher education in the Agra University as in the best Indian universities. In order to achieve this the following steps are immediately desirable.

(*i*) *Ten-year Plan for the Development of a Teaching University.*—University Departments of study should be organised in at least a few subjects, the number of subjects to be increased as part of a ten-year plan ; post-graduate teaching and research in these subjects are to be concentrated in the University departments.

(*ii*) *University Library.*—The University Library should have a proper building and a decent capital grant to make a start with at least 25,000 well chosen volumes and an annual recurring grant of at least Rs. 50,000 will be necessary to bring the Library up to a minimum standard in the course of a few years.

(*iii*) *University Laboratories.*—As some of the University departments of study will be in science, well-equipped laboratories have to be provided for these subjects.

(*iv*) *Honours Degrees.*—The stronger colleges which may be regarded as constituent colleges must be encouraged to provide instruction for Honours degrees in addition to the Pass ones. This will induce the teachers of the colleges to keep abreast of the latest literature in their subjects.

(*v*) *Inter-Collegiate Teaching.*—At the bigger centres where there is more than one college some kind of co-operation may be attempted for Honours work as also for post-graduate work in those subjects which have not been taken over by the University.

(*vi*) *Exchange of Teachers.*—Attempts may even be made to provide for exchange of senior teachers between colleges for at least one academic term at a time in order to provide freshness to college teaching and to stimulate the interests of the teachers themselves.

(*vii*) *New Universities and Greater Supervision of Affiliated Institutions.*—It is possible that Gwalior and Indore may have a university of their own in the near future, and Ajmer may like to be associated with the Rajputana or some other university. In the United Provinces Meerut and Kanpur will perhaps have universities in the not very distant future. This will take away some of the older and stronger institutions from the Agra University and it will be all the more necessary for the University to ensure that the standards of the newer institutions are kept up to the highest level. Many of these latter have been given recognition on their promising to have better buildings, a better library and better equipped teaching staff. The University may think of an Inspection Commission (which may include some distinguished scholars from other universities) to visit all the colleges of the University to see whether the institutions have justified their existence and satisfied the needs of higher education of the community.

XII.—Annamalai University, Chidambaram.

43. *Establishment of the University.*—Raja Sir Annamalai Chhettiar had been responsible for the foundation of several educational institutions at Chidambaram. In 1928 he made a generous offer to the Madras Government of handing over these institutions with a sum of Rs. 20 lakhs for the establishment of a unitary teaching and residential university. On 27th June, 1928 Government published a communique accepting the offer and promising Rs. 20 lakhs towards the endowment fund and a recurring grant of Rs. 1½ lakh per annum. The Act giving effect to the scheme received the assent of the authorities the same year and the University started functioning from the next year. The Governor-General is the Visitor of the University, the Governor of Madras the Chancellor, the founder the Pro-Chancellor, while the Vice-Chancellor is a whole time officer. One distinctive feature of the University is the Faculty of Oriental Learning which gives special importance to the study of Tamil, Sanskrit, Indian History

and Indian Music, offering special facilities for advanced study in these subjects. In 1945 a Faculty of Engineering and Technology was instituted with courses of study in Civil, Mechanical, Electrical and Chemical Engineering. Every student of the University has to reside in a hostel or in lodgings recognised by the University and this year 64% of the students are in the university hostels. The resident-tutors attached to the hostels regulate attendance and exercise supervision over the students. Physical training is compulsory for all students of the University.

44. *The Work of the University from 1929 to 1949.*—This University approximates more closely to the ideals of the residential type than most other universities in India. The teachers and students live in close association in the University campus and it is possible for the teachers to give special and individual attention to students. But the University has been severely handicapped through lack of funds and the story of these 20 years has not been one of continuous progress. The Government grant which amounted to Rs. 6,12,000 in 1946-47 was only Rs. 5,02,000 in 1948-49 and the income from endowments has also declined from Rs. 2,83,000 to Rs. 2,45,000. The income from fees has gone up slightly but the total income of the University was Rs. 12,85,000 in 1946-47, while it was about Rs. 11,40,000 in 1948-49. With a laudable desire to keep within the income the expenses have been correspondingly lowered, but there is no substantial diminution in the number of students. The number of Arts and Science students in 1946-47 was about 900, whereas in 1948-49 it was a little less than 800 and the fall is more apparent than real, for it is due almost entirely to the lessening of the number in the Intermediate classes.

The number of students in Technology remains substantially the same but those in Engineering have been reduced.

When we scrutinise the budget we find that the grades of university teachers are much lower than those in any other university, the University Professors' grade being Rs. 250—500 in the Faculties of Arts, Science and Oriental Learning, while the grade of Readers is Rs. 200—300. Even in the Faculty of Engineering and Technology the University Professors' grade is Rs. 400—900 and taking all the Faculties together we find that there are only three teachers who draw a salary of over Rs. 450, the majority of the teachers get a salary between Rs. 100—200. The ratio of pupils to teachers also is fairly high being 69 in English, 64 in Economics, 45 in Physics, 40 in Chemistry and 56 in Botany and Zoology. It is slightly lower in the Oriental Laguages and in Mathematics while it is almost satisfactory in Music, Engineering and Technology.

45. *Plans for the Future.*—(*i*) *Improvement of teachers' salaries.*—The main trouble of the University has been, as indicated above, the lack of funds. No satisfactory work is possible unless university teachers are given an adequate salary which will place them above want, and make them work contentedly. In order to improve the grades of the university teachers as also for certain other improvements a much larger Government grant is necessary.

(*ii*) *Additional residential amenities.*—The conditions of life in the hostels require to be improved through the provision of additional buildings and furniture. Rooms intended to accommodate two students are now being made to house three and in many cases the residents have to sleep on the floor on account of shortage of bedsteads. As this University is mainly residential the Hostels need greater attention.

(*iii*) *Scholarships.*—An equally important need is to increase the number of scholarships and stipends which have been considerably reduced during the last few years. In 1945-46, 199 students received university scholarships and the number has been reduced to 121 in 1948-49. Similarly the stipends in Tamil bad gone down from 77 to 44 and those in Music from 88 to 47. There must be many meritorious students desiring to pursue their studies in a comparatively cheap place like Annamalainagar, who are at present being prevented from doing so. Our recommendations in regard to scholarships need immediate implementing in a residential university like this.

(*iv*) *Engineering College.*—The Engineering College provides a major problem. The Government will have to consider whether they require this Engineering College to exist and to serve the province. If they do so, they must be prepared to help the institution much more liberally than they have been doing. The College cannot retain qualified members of the staff on their present salaries and they cannot maintain even the present courses in Civil, Mechanical and Electrical Engineering at a proper standard of efficiency. The B. Sc. (Tech.) course too is naturally limited and its extension depends on the necessary Government grants.

(*v*) *Music and Oriental Studies.*—The future of the department of Music is somewhat uncertain on account of the establishment of an academy of South Indian Music with the help of funds provided by the Central Government. But this University should develop into a strong centre for advanced work and research in Tamil Language and Literature. Capital grants are essential for building up the library with the purchase of necessary manuscripts.

It is hoped that with adequate financial support from the Government, the University will develop into a genuine centre of learning and research which it is eminently fitted to be by virtue of its situation and its beautiful campus.

XIII.—*Travancore University.*

46. *Establishment of the University.*—The desirablity and feasibility of a University for Travancore had been investigated by two Committees in 1919 and in 1924 but the University was not established till 1937. The aims of the University as described in the preamble to the Act are :—

1. to effect a reorganisation of the system of education in the State with a view to the gradual development of technical and technological education ;
2. to make greater and more systematic provision for the furtherance of original research in the various branches of Applied Science ; and
3. to provide for the conservation and promotion of Kerala Art and Culture.

The six Government Colleges at Trivandrum were transferred to the control of the University and later the colleges of Arts and Science were amalgamated. The four private colleges of the State were also admitted to the privileges of university recognition.

47. *The work of the University from 1937 to 1949.*—In order to further the aims enunciated in the Act the following institutions were started :—

1. An Institute of Textile Technology offering Diploma courses in Textile manufacture and Textile Chemistry.

2. A College of Engineering providing instruction for Degree and Diploma courses in Civil, Mechanical and Electrical Engineering.

4. A Central Research Institute devoting itself to research in the Applied Sciences, particularly in the subjects which have a special bearing on the agricultural and industrial conditions of the State.

5. The School of Arts.

The University has also under its control an Oriental Manuscripts Library and a department of Publications intended to enrich Malayalam and Tamil Literatures.

In 1946 the University accepted the following recommendations of the Education Organisation Committee and attempted to bring them into operation :—

1. The institution of a three-year degree course and the abolition of the Intermediate examination ;
2. The institution of a university entrance examination ;
3. The opening of pre-university schools.

48. *Plans for the future.—(i) Promotion of Research work.*—The enrolment in the University has been increasing rapidly as is evidenced by the fact that the total was about 3,800 in 1942-43 and 5,700 in 1946-47. It is to be noted, however, that the increase has been mainly in the number of Intermediate students of whom there were about 3,300 in 1946-47. The B.Sc. and B.A. classes are comparatively crowded but the number of research students has not gone up during the last five years. Actually the number was 36 in 1942-43 and 29 in 1947-48.

The Central Research Institute is doing a considerable amount of practical work through the Public Health Laboratory, the Industrial Research Laboratory, the Observatory and the Division of Mineral Survey. But the Fellowships and Scholarships instituted by the University for encouraging research have not had the response which they should have had. The only two departments in which there is a decent number of research students are Chemistry and Marine Biology. Astronomy has had no research student during the last five years and Physics had only 3. That Arts subjects like History and Economics failed to attract a decent number is not surprising but one regrets to note that in Tamil there has been no research student from 1943 to 1949 and in Malayalam only 7 in these six years. If the University is to carry out the aims enunciated at the time of the foundation, greater attention should be given to the fostering of the spirit and work of research by :

(*a*) the offer of more liberal fellowships and scholarships than has been done so far ; and by

(*b*) the appointment as professors of outstanding men with a considerable amount of research work to their credit.

This latter would involve the raising of scales of salaries of University teachers. Analysing the salaries of the 346 teachers in the University we find that not one of them draws a salary of more than Rs. 850, that the largest number (108) gets below Rs. 100 and the next largest (97) between Rs. 100 and Rs. 200. It is obvious that the best men cannot be attracted to university teaching so long as the emoluments remain what they are.

(*ii*) *Oriental Manuscripts Library.*—The Oriental Manuscripts Library has a collection of 28,000 manuscripts and it should be possible for the University to make that a centre for a considerable amount of research work through properly paid research fellows, working under the supervision of the University professors.

(*iii*) *Marine Biology and Mineralogy.*—The Science subjects in which Travancore has special facilities for research work are Marine Biology and Mineralogy. It is hoped that these departments will be substantially strengthened. It will perhaps be best for the University if it decides as to the subjects in which instruction will be offered only up to the Honours and Master's degrees and the others in which intensive research work can be continued.

(*iv*) *Three-year Degree Course.*—The academically sound experiment of a three-year degree course has not succeeded in Travancore, because in all other South Indian universities students can go up for the ordinary B.A. degree after two years' study and public feeling in the State has been, in consequence, against the lengthening of the course. With the acceptance of our recommendations by other universities these difficulties will disappear and Travancore will be able to make the Arts and Science degrees mean something real.

(*v*) *Cochin Colleges.*—Political conditions often affect the universities and the union of Cochin and Travancore may change the constitution of the University. The colleges in Cochin may like to be transferred from the control of the Madras University to that of Travancore and then it may be necessary to carry out some more radical changes in the structure of the University, by having some of the specialised or professional departments of study at Ernakulam or Trichur instead of at Trivandrum. What these branches will be will depend upon local conditions and on the financial implications of having higher university work at two university centres instead of one.

XIV.—Utkal University, Cuttack.

49. *The work of the University since its Inception.*—The University is incorporated under the Utkal University Act of 1943, which describes its functions of teaching and affiliation and defines its territorial limits as extending over the whole of Orissa and of the Oriya-speaking States. In 1947 it had 10 Arts Colleges, (some of which had Science courses as well), one Medical College, one Teachers'

Training College and one Science College teaching up to the Intermediate standard. One of these colleges, the Ravenshaw College, Cuttack, has a long record of distinguished work and all Post-graduate teaching and a good part of the Honours teaching are concentrated in this institution. The University has no teaching departments and has been exercising only affiliating powers up till now. The establishment of the University has not therefore affected the intellectual life of the province in any significant way and one does not know if the colleges are better supervised to-day than they were under the Patna and the Andhra Universities. Nominally there is provision for Post-graduate teaching up to the highest standards of the D. Litt. and D.Sc. degrees but in practice instruction has been imparted for the Master's degree in a limited number of Arts subjects and in only one of the experimental sciences (Chemistry). As has been pointed out, the University is dependent upon its constituent colleges or college for the provision of instruction in all classes. Its main function has been to conduct university examinations and to recognize institutions which are eligible to send up candidates for these examinations.

50. *Plans for the Future.*—(*i*) *Necessity of a Teaching University.*—A purely affiliating university cannot be regarded as a real university, for it provides no intellectual centre nor does it help in any significant manner to develop intellectual life in the college. To be effective it must have a teaching core, even if it is at first in a limited number of subjects and only for post-graduate students.[1] While the University has been functioning in a small administrative building the real academic work of Cuttack has been carried on by the Ravenshaw College which has been in fact the University College of the province.

(*ii*) *The position of the Ravenshaw College.*—During the year 1947-48 the total expenditure of the College was Rs. 5,06,000 of which the Government contribution was Rs. 4,08,000. Of the 1,220 students in the College the majority were in the Intermediate classes and only 43 were in the M.A. and M.Sc. classes. The College has decent-sized hostels in which nearly 40% of the students reside and encourages a number of extra-curricular activities. The Library too is fairly equipped with its 35,000 volumes though some of these have outlived their usefulness. But it has the usual disabilities of a Government College :—

(*a*) The members of the teaching staff are frequently transferred (19 out of 66 having been transferred in 1947-48);

[1] See Chap. XIII.

(b) Teachers are promoted to better salaries and higher status more on grounds of seniority than on account of academic qualifications and research work.

When the Intermediate classes are taken away from the Ravenshaw College it may become not only the de-facto University College but the de-jure one as well. It will be for the Government to decide whether the college will be administered by a specially appointed Governing Body or handed over to the University. If it is by the former, the Governing Body should be constituted on lines indicated for the Governing Body of the constituent colleges of a university and should have all powers regarding appointments and promotions. There should be a separate cadre of the Ravenshaw College teachers who will not be liable to be transferred either to other teaching institutions or to administrative posts. This is the only way in which we can preserve the distinctive individuality and character of such institutions.

(iii) *Consolidation and extension of Post-graduate Teaching.*—The University has not only to consolidate post-graduate teaching in English, Oriya, History, Economics, Political Science, Mathematics and Chemistry but to extend it to other essential branches of study like Philosophy, Sanskrit, Sociology (including Anthropology), Physics, Biological Sciences and Geology. The University Library must have a separate building and a decent capital grant immediately. Many of the Ravenshaw College books will probably be transferred to the new Intermediate college but about 10,000 volumes may be transferred to the university section for the use of its senior students.

(iv) *Ancient History and Anthropology.*—In Orissa there is great scope for research in Ancient History and Anthropology. The University should encourage scholars to take up research wholeheartedly by arranging for Fellowships with decent emoluments and allowing the University teachers sufficient leisure to devote to original work. All these developments, however, require the transformation of the University from a purely affiliating body to one which is mainly a teaching institution.

XV.—Saugor University.

51. *The Work of the University since its Inception.*—The preamble to the Saugor University Act passed in 1946 explains the circumstances leading to the establishment of a teaching and affiliating university for the Hindi-speaking areas of C.P. and Berar. The establishment of the University was made possible through a generous donation of Rs. 20 lakhs by Dr. Hari Singh Gaur which was supplemented by

Rs. 10 lakhs from the Provincial Government to form the endowment fund of the proposed University. The University has been functioning for only two years but some of its affiliated colleges are very much older. The Mahakoshal Mahavidyalaya was originally an Intermediate college at Saugor and was removed to Jubbulpore in 1883. In 1883 it became affiliated to the B.A. standards of the Calcutta University. The Prantiya Shikshan Mahavidyalaya goes back to a small training institution founded in 1890 at Nagpur, which was transferred to Jubbulpore in 1902 and became a full-fledged Training College in 1911. Some of the private colleges also are much older than the University, the Raipur one having been founded in 1937 and the Hitakarini Mahavidyalaya in 1933 at Jubbulpore. The University has students for the Intermediate classes in Arts, Science and Commerce in addition to those for higher degrees but the number of students in the affiliated institutions taken together is much larger than at the University centre. In some subjects the latter figures are remarkably low, e.g. in History there are altogether 15 students at the University centre, 9 of them in the Intermediate classes and 6 in the B.A. Pass classes. Last year 339 candidates appeared for the B.A. Pass examination and it is expected that the numbers for the 1949 examination will not be less ; but the University has only about 30 students in the second year B.A. class. In the Sciences too the position is not very different as there are only 25 students studying Chemistry in the second year B.Sc. class and 17 studying Physics, while those for Zoology and Botany are 7 and 8 respectively. The numbers in the M.Sc. classes in Physics and Chemistry are comparatively high and that is explained by the limited opportunities available for these studies at other centres in the Province. The University does not seem to have made much headway and the reasons are obvious :—

1. Saugor does not have the traditions of higher education that Nagpur and Jubbulpore have ;
2. the financial position of the University has not enabled it to appoint eminent teachers and thereby attract students from other centres ;
3. the University has no proper buildings either for teaching or for residence. What it has is mostly improvised barracks. The library and laboratory facilities are not what they should be in a teaching university, the former possessing only about 12,000 books and the latter lacking some of the essential equipment.

52. *Plans for the Future.*—(*i*) *Suitability of Saugor as a University site.*—While the progress of the University has not been signi-

ficant there are considerations in favour of the development of a good university at Saugor.

(*a*) Saugor is a very suitable place for a university site because of its climate and quiet surroundings ;

(*b*) A generous donor has contributed a substantial sum which is generally regarded as the first instalment of his contribution to the University. If the Central and the Provincial Governments show sufficient interest in the University a generous response may be expected from the Founder ;

(*c*) Building up of a university at a place with vested interests is always difficult. At Saugor the University is able to start with a clean slate, and can therefore be moulded according to definite plans.

(*ii*) *Non-recurring Grants for new Buildings and Equipment.*—Buildings, books and laboratory equipment are immediate necessities. Substantial non-recurring sums have to be sanctioned and materials made available for the completion of the projects within the shortest possible time.

(*iii*) *Necessity of a better-paid Staff.*—Buildings and equipment by themselves will not make a university. The present staff is not adequate for a real teaching university. From the analysis sent to us we learn that there is not yet a teacher on a salary higher than Rs. 850 p.m. and that the majority of these teachers are in the grade of Rs. 150-250. University Professors have to be appointed in every important subject and they should be assisted by Readers and Lecturers and *not* Assistant Lecturers. The number of teachers is not too low in proportion to the number of students, the pupil-teacher ratio being 13 to 1, but in place of the Assistant Lecturers who are now mainly responsible for University work we should have teachers with higher emoluments and status.

(*iv*) *Scholarships.*—Provision has to be made for an adequate number of scholarships and fellowships and as Saugor will be a predominantly residential university, the scholarships will have to be sufficient for meeting all the expenses of meritorious students.

(*v*) *Ensuring better Finances.*—At present the maintenance grant from the Government is only Rs. 3 lakhs a year and the endowment fund which was expected to yield Rs. 1,10,000 last year yielded only Rs. 64,000. This year the budget estimate for this item is Rs. 1,00,000 which seems rather optimistic. The University is at present dependent as much on students' fees as on its income from endowments and government grant. This can never lead to the building of a strong residential university. The recurring income

of the University has to be substantially increased as will be evident from the fact that one of its affiliated colleges has an annual budget of nearly Rs. 5 lakhs for the current year and has spent over Rs. 4 lakhs last year. If the Mahakoshal Mahavidyalaya can ensure efficient higher education for its limited number of students by spending the sums indicated above, the teaching University must plan its expenses on at least as generous a scale as that.

(*vi*) *Concentration on Higher work : Difficulties of Professional Education.*—In Arts and Science the main work of the University will naturally be with students working for the Honours and Master's degrees or doing research. The Law Faculty is not yet a source of strength but one would like to see it strengthened in a university founded by Dr. Gaur. The College of Agriculture for which money has been provided in the current budget will require a much larger sum and adequate buildings before it can become a reality. The University may be well advised not to think of a rapid expansion of professional colleges before establishing a strong centre of teaching and research in at least a few of the Arts and Science subjects.

XVI.—University of Rajputana (Jaipur.)

53. *Work since its Inception.*—The Rajputana University came into existence in 1947 as a result of the co-operative efforts of the States of Rajputana. It has been functioning as a federal university but one is not quite sure if the colleges of the University can be described as constituent colleges. Of these 28 colleges 5 are professional ones, 2 for Teachers' Training, one for Medicine, one for Engineering and one for Law. Of the others more than half are only Intermediate colleges which, according to our scheme, should be regarded as secondary institutions. The colleges which carry on instruction up to the M.A. stage, *e.g.* Maharaja's College, Jaipur, Jaswant College, Jodhpur, and Dungar College, Bikaner, are adequately described as affiliated colleges of the University. At present the University is only recognising the teaching carried on in these institutions and holding examinations for their students. The Vice-Chancellor feels the need of University Departments of post-graduate teaching and research and it is hoped that a beginning will be possible this year. Financially the University is in a satisfactory position for the States contribute about Rs. 2,65,000 a year and about Rs. 2,00,000 are realized in respect of examination fees. Endowments have been promised for the departments of Economics, Geology and Indian Philosophy and other endowments too may be forthcoming. The Government of Jaipur has set apart an extensive site for the University and has decided that the university library and university

hostels will be constructed there in addition to the administrative and faculty blocks. It is expected that a three years' Honours course for the B.A. and B.Sc. will be started in the near future. Provision has been made in the budget for publishing valuable contributions to knowledge by university teachers. Funds have also been allocated for organizing and publishing extension lectures delivered for the benefit of the general public.

54. *Plans for the Future* : (*i*) *Teaching work and Research.*—For the short period of the existence of the University it has praiseworthy achievements to its credit. It is hoped that plans for the expansion of the work of the University and developing it into a teaching and federal university will be expedited. If the three teaching departments start functioning this year, it will mark the beginnings of real university life.

(*ii*) *University Library.*—The building up of a good University Library is however one of the first necessities. The sum of Rs. 20,000 which has been allocated is merely a token grant and for post-graduate study and research work even in two or three branches of knowledge a library cannot be built up without a much larger amount.

(*iii*) *Fellowships and other Facilities for Higher Work.*—It is equally necessary to have scholarships and fellowships of an adequate amount. The six fellowships of Rs. 75 per month which have been provided will not attract the best students for research. As has been suggested in an earlier chapter these research fellowships should have the same emoluments as those of junior teachers ; and competent men as should be appointed University Professors to supervise the work of the students working for the doctorate. Advanced work for science subjects will naturally involve the building and equipment of spacious laboratories and here the University may have to proceed slowly.

(*iv*) *Specialization in some Sciences.*—The new State of Rajasthan has however latent natural resources which have to be discovered and industrially developed. Departments of research in Applied Chemistry, Geology and Physics will train the men required by the State for doing this work. Some of the richest industrialists of the country come from Rajasthan and it is for the University to induce them to contribute generously towards the cost of training scientists and technologists.

(*v*) *More Professional Colleges.*—The University may also consider the need for starting more professional colleges. At least one degree college in Agriculture is an urgent necessity and another Engineering College dealing with those branches for which the Pilani

institution does not offer any facilities. The spirit of commercial enterprise is said to be ingrained in the inhabitants of Jaipur, Jodhpur and Bikaner. At least one institution devoted mainly to higher studies in Commerce may be organized at a central place.

(*vi*) *Colleges for Women*.— In Chapter XII we have discussed the general problems of women's education and expect our conclusions to be implemented by most universities. Rajputana has been backward in imparting education to women and hence we make a special point in emphasising the need for women's education in this region. Social conditions in Rajasthan are not conducive to co-education and hence some colleges for women are required. Jaipur has given a lead in opening an excellent Women's College and similar colleges should spring up at other important centres.

XVII.—East Punjab University.

55. *Problems of the University.*—Indian universities have generally been established after deliberations in Committees, discussions in Councils and Assemblies and passing of Acts. No such stages intervened before the establishment of the East Punjab University which was born in toil and travail, in the sufferings of the millions who migrated eastwards from their homes which they had lost. The University of the Punjab was one of the most flourishing ones in India in 1946 ; its position was unique in this that it served not only the whole of the Punjab and N.-W.F.P. but a number of States as well. That year it had 45,000 students appearing for the Matriculation examination and nearly 7,000 for the first degree. The number of affiliated colleges was in the neighbourhood of one hundred and the University had its own departments of instruction for higher studies in most of the Arts and Science subjects. The assets of the University in the shape of magnificent buildings and elaborate equipment were valued at about a crore of rupees.

The partition meant that the University had to leave all this behind and a new institution had to be organised to cater to the needs of East Punjab and of the thousands of young men and women who had to leave their colleges in the Western Punjab and in N.-W.F P. At the time of the partition East Punjab had 38 non-professional colleges teaching upto the first degree and 7 professional institutions. These few institutions had to accommodate the non-Muslim students from 50 other colleges in many of which they formed the majority. This year 37,000 students are appearing for the Matriculation examination of the East Punjab University, 10,000 for its Intermediate

and 5,000 for the Bachelor's degree. These figures indicate that the number to be educated in East Punjab is almost the same as that in the whole of the province in 1946. This education has been made possible through loans given to the displaced persons to encourage continuance of their study and an attempt to make things less difficult for them in every possible way.

The result is that in many of the old institutions, the number had to be doubled, while a few new non-professional colleges had to be started. Now we have 49 of these institutions teaching up to the B.A., 9 of which give instruction in some subjects up to the M.A. standard. Some new professional institutions have also been started, among which, particularly may be mentioned two new colleges for the training of teachers, one Agricultural College, one Veterinary College, one Law College, one Engineering College and three Commerce Colleges. The greatest difficulty, however, has been to manage the University Departments of teaching, especially the Honours schools in Science. The Departments of Physics and Chemistry were working at Delhi for two years but have now to be shifted to Hoshiarpur where the Zoology Department has already been established. Botany has been attached to the Khalsa College at Amritsar. The Camp College at Delhi had been carrying on M.A. teaching in the largest number of subjects, while the Government Colleges at Ludhiana and Hoshiarpur were also doing some M.A. work. The Delhi institution has to be wound up by 1950 and arrangements are being made for post-graduate teaching in English at Hoshiarpur, while provision for higher teaching in Mathematics, Philosophy and Psychology has to be at some other centre. The University may have to discontinue its post-graduate classes in Economics, Political Science and History until it obtains a permanent location. The Oriental College has been functioning at the D.A.V. College, Jullundur and at the Khalsa College at Amritsar and this too is a temporary arrangement. What has been done by the University during these two years is praise-worthy but everything is in an unsettled state and we have to think of a permanent University centre carrying on at least as much of teaching as was being done at Lahore and exercising as much of supervision over the affiliated colleges as the Punjab University was doing.

56. *Suggested solution of the problems.*—(*i*) *Location of the University.*—It has been suggested that the new University should be located at the capital for more than one reason :—

(*a*) It will be easier to obtain the necessary financial provision and facilities for building materials if the construction of the University is made a part of the capital building

project ; (*b*) the new capital will require cultural and intellectual life which can only be provided by the University.

The objection that the proximity to political activities is a distraction for academic life is a substantial one; but for the practical considerations mentioned above the University will most probably have to be located at the capital.

(*ii*) *Financial provision for new buildings.*—The share of the East Punjab University in the assets of the old University was estimated at Rs. 40 lakhs, but this sum by itself will not go a long way towards the building of the new University. All the departments which existed at Lahore have to be put up at the new centre and arrangements have to be made for laboratories which had not been found necessary at Lahore on account of the help given to the University by the Government College. The practical work in the Science Honours school could be carried on at the Government College on account of the resources and well-equipped laboratories of that institution. Even if there is a Government College in the proximity of the new University it is doubtful if it will be of much use for Honours and Post-Graduate Science work. We have therefore to think of the construction of teaching and administrative blocks, the library and laboratories on a larger scale than what existed at Lahore.

(*iii*) *Provision for the recurring expenses of the University.*—The Punjab Government used to make a recurring contribution to the University for certain specific purposes and these grants amounted altogether to about Rs. 3 lakhs annually. The expenses of the University which amounted to a very much larger sum could be met out of the income accruing from the examination fees, mainly of the Matriculation and the Intermediate examinations.

Our general recommendation is for the removal of these examinations from the control of the University. This will mean that the Government will have to be responsible not only for the non-recurring expenditure on buildings and equipment, but for the whole of the recurring expenses as well. The details of these expenses will have to be worked out and the staff required for the various subjects determined in the light of the estimates based upon the numbers studying these subjects at Lahore.

(*iv*) *Post-Graduate teaching in Arts and Science : Oriental studies.*—In Arts post-graduate teaching in the following subjects will have to be offered by the University :—

English, History, Economics, Political Science, Mathematics, Philosophy, Psychology and Geography.

The Oriental College has to be built and made to function as it did at Lahore with better facilities for research through a well-equipped library. Honours Schools in Physics, Chemistry, Zoology and Botany have to be self-sufficient, while one in Geology and Mineralogy should be started as early as possible to provide trained personnel for prospecting in East Punjab and Himachal Pradesh. It is a huge task which faces the University authorities : it will probably take a large number of years for its accomplishment and its successful completion depends entirely on the whole-hearted co-operation of the Central and the Provincial Governments.

XVIII.—University of Gauhati.

57. *The work of the University since its establishment.*—The University was incorporated by an Act of 1947 and started functioning in 1948. It is an affiliating, teaching and residential university, with jurisdiction over all the schools and colleges in Assam. Under the Act the Government of Assam contributes annually not less than Rs. 5,00,000 to meet the recurring charges of the University.

The teaching work of the University is carried on in the Post-Graduate, Law, B.Com. and Teachers' Training Departments. Under-graduate classes other than B.Com. are held only in such subjects as are not taught in any of the affiliated colleges. Honours classes in Assamese and Botany are held in the University and a Diploma course in Secretarial Practice has also been provided. In the Post-Graduate Departments there are four Professors, ten Readers and a number of Lecturers. Subjects in which admissions have been made are :—

Mathematics, History, Philosophy, Economics, Commerce, Assamese and Botany. For under-graduate work, there are teachers in Education, Anthropology and Statistics, while Law is a full-fledged department.

There are two Professional Colleges affiliated to the University, the Medical College at Dibrugarh and the Agricultural College at Jorhat. In addition, there are 13 first grade colleges and 3 second grade ones. Honours courses in B.A., B.Sc. and B.Com. extend over two years, while the Law course is a three-year one. Laboratories in Botany and Anthropology have been equipped and steps are being taken to establish Physics and Chemistry laboratories. Attempts are being made to build a University Library and Rs. 25,000 were provided in last year's budget.

The University is working in borrowed buildings or temporary constructions. Temporary arrangements for the residence of the

staff and students have been made and the University will be ultimately located at Pandu, a few miles away from Gauhati.

Of the affiliated colleges, by far the most important is the Cotton College, Gauhati. It is a Government institution of long standing which used to provide instruction not only for the under-graduate courses but also for the M.A. course in one or two subjects, though these latter have been discontinued. The senior members of the staff are fairly well-paid and the college budget for 1949-50 exceeds Rs. 4,00,000. The other colleges are scattered in different parts of the province, there being two others at Gauhati and four at Shillong. The financial position of many of these colleges is not very satisfactory and the majority of teachers are ill-paid.

The University has to depend almost entirely on Government grant, the percentage of the Government grant to the total income being 92·8 in 1947-48 and 69·2 in 1948-49. The University has at its disposal about Rs. 20 lakhs which will be used for permanent buildings in the near future.

58. *Plans for the Future.*—(*i*) *Permanent Buildings : Financial Provision for these.*—The University has to be built practically from nothing. If the Cotton College is transferred to the University that may form the nucleus of new constructions but there is very limited room for expansion on the present site of the Cotton College. The site chosen by the University at Pandu is an extensive one. Here the University can locate all the buildings at present projected and have plenty of room for expansion. But such a project will cost a very large sum of money and this will have to be provided by the Government in instalments extending over 5 or 6 years. The Government should, before finally fixing on the site, make sure that it is not liable to be flooded by the Brahmaputra.

(*ii*) *University Library.*—One of the most important of the new buildings should be a well-planned library for which in addition to the building and equipment grant, a non-recurring grant of a few lakhs will be necessary for making a start with a proper collection of books. Among Science subjects, Botany has been given preference over others but we are told that the Physics and Chemistry laboratories will be fitted up very soon.

(*iii*) *New subjects for advanced studies.*—In the list of subjects which at present constitute the teaching departments of the University one would like to see a few additions. The Province of Assam has been a meeting ground of several cultures and numerous languages. It is also rich in mineral resources which have not yet been fully exploited. Anthropology which is at present a subject of

under-graduate studies should have a post-graduate department. Similarly Philology (with Linguistics) and Geology should have full-fledged departments of study.

(*iv*) *Professional Colleges for Education and Engineering.*—To develop secondary education in the Province a good many trained teachers will be required and the Province needs a number of educationists with higher qualifications in this specialized branch. The Teachers' Training Department of the University has to be expanded to afford facilities for training to more graduates and to develop advanced studies in Education leading to either the Bachelor's or the Master's degree in the subject. The Province has yet no Engineering College : such an institution has to be organized in the near future for training Civil, Electrical and Mechanical Engineers, even if we cannot have any other form of engineering.

(*v*) *Recurring grants.*—In order to have professorships and lower posts in all these departments of study, the University will require substantial recurring grants from the Government of Assam. The Central Government may also consider to what extent it has a responsibility for the new universities in insufficiently developed areas especially where resources of the Provincial Government are particularly limited. Assam requires trained men in every sphere of life. On account of the paucity of opportunities for higher education in the Province, it is difficult to obtain the trained personnel in many spheres of life. Strenuous efforts will be required to stimulate higher education through the provision of generous scholarships for under-graduate and post-graduate classes and for professional education. Research Fellowships are necessary for encouraging original work and well-paid chairs are to be established in the important branches of university studies. These chairs should be occupied by competent scholars from all parts of India whose help will be required for a number of years to make Assam self-sufficient.

XIX.—University of Poona.

59. *Establishment of the University.*—Poona has been a great centre of higher education in Western India with the Deccan College and the Fergusson College as its oldest institutions. The idea of universities in the different linguistic divisions of the Bombay Presidency, was moved at an Education Conference in 1917 and supported by the Committee on University Reform appointed in 1924. This recommendation of the Committee was endorsed by the Bombay University Senate in 1926. During the controversy, which followed the Government decision to close the Deccan College, the proposal for a Poona University was pressed but with no immediate

results. In 1942, a Committee was appointed to investigate this matter and its report published in 1943 recommended the establishment of a university which would combine the functions of teaching and affiliating.

60. *The Act.*—The Poona University Act passed in 1948 gave effect to most of the recommendations of the Committee and its distinctive features related to the organisation of post-intermediate university instruction within the Poona area and the centralising of all post-graduate teaching in the University. The Poona colleges are constituent colleges, while those outside are affiliated. Instruction for the first degree is being imparted at Poona by pooling the resources of the constituent colleges and the recognition of certain members of the staffs of the colleges as university teachers. University Professors and Readers will be appointed in most of the Arts and Science subjects and they will shoulder the burden of the major part of higher teaching though some help may be given by the senior college teachers. One interesting feature is the recognition as institutions of post-graduate work of some centres of learning like the Bhandarkar Oriental Research Institute and the Gokhale Institute of Politics and Economics.

61. *The relationship between the Poona Colleges and the University.*—Instruction for the first degree in Arts and Science is being given in three colleges : the University has laid down the minimum qualifications of teachers who are permitted to teach students of the degree classes and teachers possessing those qualifications have been recognized as university teachers. Students in the degree classes are enrolled in these constituent colleges and pay their fees which are credited to the university by the colleges. The University will recompense the colleges for the services of these teachers and also of the others, who are responsible for tutorial instruction, laboratory demonstrations and administrative help in libraries and laboratories. As these 'contributed' teachers will also be partly responsible for post-graduate work the relationship between the University and the constituent colleges is a close one. The colleges have an independent existence for Intermediate teaching, but if this becomes pre-university work these colleges may cease to be teaching institutions of the University and may function only for tutorial and seminar work and as units of residence.

The five professional colleges will naturally retain their individuality as they will continue their work as before.

62. *The future expansion of the University.*—As the University started its work only in June, 1949, and as it has not yet appointed its full-time teaching staff it is not possible to outline its future with

any definiteness. The following five branches were indicated by the Vice-Chancellor as subjects for specialisation in the near future :—

(*a*) *Sanskrit Studies.*—Poona has been a great centre for the scholarly study of Sanskrit with the Bhandarkar Institute and the Deccan College doing noteworthy work in recent years. Research students of the University may be trained at these institutions and make substantial contribution to the work of editing the *Mahabharata* and of the projected Sanskrit dictionary.

(*b*) *Maratha history.*—Individual scholars and organized institutions have been engaged in reconstructing the history of Maharashtra. The University may well attempt to co-ordinate this work and employ teachers and advanced students for this purpose.

(*c*) *The life and work of the sages and saints of Maharashtra.*—Some work in this line has been done but it is up to the University to have a team of workers exploring the original documents.

(*d*) *Fine Arts.*—Poona has been a great centre of classical music and a college of Music may have sister departments of Painting and Dancing. Advanced work may be done with investigation of the Sanskrit and mediaeval sources for the theories of music and other arts.

(*c*) *Ayurveda.*—Systematic study of the ancient literature may be combined with knowledge of modern medical science and this University may do pioneer work in this direction.

(*f*) *Other subjects for specialisation.*—In addition to these five branches the University desires to establish a chair of Experimental Psychology with a view to developing the study of Educational and Abnormal Psychology. The Meteorological Observatory, the Irrigation Institute and the National Chemical Laboratory will help research workers in the physical and chemical sciences. Sugar Technology may be specially studied on account of the concentration of sugar industries in this region. Finally, research in Medical Sciences may be fostered through the co-operation of the University Medical College with the Military Medical College which has started work at Poona.

(*g*) *The Women's University.*—Thackersey Women's University has its headquarters in Poona. It will be in the interests of women's education if there is close co-operation between the two universities.

(h) *Buildings.*—The University has been fortunate in acquiring the Governor's residence at Ganeshkhind for its central offices and teaching departments with adequate space for the construction of hostels, library and laboratories. The future development of the University will depend on liberal grants from the government nd wise administration.

XX.—The Maharaja Sayajirao University of Baroda.

63. *The Act.*—This, the youngest of the Indian universities, came into being on 30th April, 1949 through the enactment of the University Act by the Baroda Government before the merger of Baroda in Bombay Presidency. Under this it is intended to be a teaching and residential university having also powers of affiliation. The powers and duties of the university bodies follow the lines of other teaching and affiliating universities, one special authority being the Council of Post-graduate Studies and Research to deal with all matters relating to advanced instruction, training and research. As there is no Academic Council in this University, this body will probably exercise some of the functions of the Academic Council in other universities. In addition to the affiliation of colleges the Senate is empowered to recognise any institution of research or specialized studies for the purposes of university training. In the schedule the University area is limited to a radius of 10 miles from the University offices and the constituent colleges are as follows :—

1. The Baroda Arts and Science College.
2. The Pratap Singh College of Commerce.
3. The Secondary Teachers' Training College.
4. The Engineering College & Kalabhavan.
5. The Medical College.

The recognised institutions are the following :—

1. The Oriental Institute.
2. The Technological Institute.
3. The College of Indian Music.
4. The Museum.
5. The Baroda Sanskrit Mahavidyalaya.

64. *Financial Provision for the University.*—The Government of Baroda sanctioned a block grant of Rs. 20,00,000 for the maintenance of the institutions which were taken over by the University from 1st May. A further sum of Rs. 30,00,000 was sanctioned for the construction and equipment of the Senate Hall, the University offices and the University Library. A sum of about one crore in Government Securities was transferred to the University Fund as its endowment. Of this sum Rs. 25,00,000 have been ear-marked for

the construction and equipment of the Engineering College and Rs. 5,00,000 for the maintenance of the Chair of Banking at the Commerce College (and for research scholarships in Advanced Banking). The remaining amount is meant for the development of the Textile and Chemical Technology institutions and for post-graduate work in the faculties of Science, Commerce, Medicine and Engineering. A trust of Rs. 6,00,000 has been constituted for women's education, while Rs. 2,50,000 have been transferred on account of the Sayaji Memorial Lecture Fund. As the present endowment will be utilised for the specific items mentioned above, it was proposed by the Baroda Government to contribute a substantial sum for the permanent endowment of the University but this has not yet materialised.

65. *Plans for the expansion of the teaching activities of the University.*—(*a*) *Home Science.*—The University proposes to organise a college for Home Science. As mentioned above, funds have been allocated for the institutions. This college will conduct courses in Child Psychology, Nursing, Home Management, Home Economy and Hygiene. A Nursery School has been established to serve as an adjunct to the Home Science College for experimental purposes.

(*b*) *Fine Arts.*—Another institution which the University proposes to maintain is a Fine Arts College which will include courses in painting, music, architecture etc. There already exist at Baroda a College of Indian Music, a Picture Gallery and a Museum, while the Kala Bhavan has a Fine Arts and Painting section. The Music College and the Kala Bhavan are now under the control of the University and with these resources available a good College of Fine Arts may be developed.

(*c*) *Technology.*—An Engineering College has been recently started and there are courses in Weaving and Chemical Technology in the Kala Bhavan. When studies in Technology are further developed there will be a full-fledged Faculty of Technology.

(*d*) *Arts and Science Chairs.*—A start has been made with the creation of University Professorships but chairs must be created in all the important subjects of study in the Faculties of Arts and Science, if the University is to fulfil its functions as a centre for advanced teaching and research work.

(*e*) *Other Professional Institutions.*—There is at present no Agricultural College nor any institution for legal studies. We do not know if the latter is an urgent necessity but if a Law College is established, we hope it will justify its existence by satisfying the criteria we have laid down in Chapter VII.

CHAPTER XVII

New Universities

I.—The National Impulse and New Universities.

1. The Nationalist Impulse in Education. 2. Gurukula Kangri. 3. The College of Engineering and Technology, Jadavpur, Calcutta. 4. Visva-Bharati at Santiniketan. 5. Jamia Millia Islamia.

II.—The Planning of New Universities.

6. The Value of Variety in Higher Education. 7. City Universities. 8. Rural-Urban Relationship. 9. Regional Universities. 10. Universities from Private Benefactions. 11. Conditions for Creating New Universities. 12. University Charters.

III.—13. Recommendations.

I.—The National Impulse and New Universities.

1. *The Nationalist Impulse in Education.*—During the earlier years of the nationalist movement a number of institutions of higher education were established independent of the government and without its support, determined to work out their own destinies in the spirit of a free India. Though their difficulties and discouragements were great, and the mortality among them high, a few of them survived and have justified the heroic struggle they made. Chief among these survivors are the College of Engineering and Technology at Jadavpur, Calcutta ; the Visva-Bharati at Santiniketan ; Jamia Millia Islamia, near Delhi ; and the Gurukula Kangri at Hardwar, U.P.

2. *Gurukula Kangri.*—The institution with its branches has about 1,500 students, about 100 of the College grade. Vedic research, Ayurvedic research and advanced work in ancient Indian literature and history have been its specialities. Non-recognition of its degrees and diplomas had stood in the way of its popularity, but now after half a century of conscientious work it is being recognised as a real centre of learning.

3. *The College of Engineering and Technology, Jadavpur, Calcutta.*—Of all the undertakings of the " National Council of Education " of a few decades ago, the College of Engineering and Technology is the only one to survive. Founded in about 1921, it has had a long and bitter struggle. Its teachers lived on very meagre salaries and were compelled to add to their income by outside work. Since the institution had no university affiliation and could not confer academic degrees, its graduates were excluded from responsible positions in the government service, where the holding of such a degree was a pre-requisite to appointment. However, the educational work of the College was of such a high order that among the industries of Calcutta the diploma of the College came to be held as in no way inferior to a university degree.

With the advent of independence, substantial grants have been made to it by the government. Also, a very substantial gift of machine shop and laboratory equipment was made by the American Army at the close of the War. With a well-established reputation for high quality, the Jadavpur College of Engineering and Technology seems to have a promising future. We understand that its governing body prefers that it remains independent and unattached to the Calcutta University, free to continue to work out its own programmes.

We believe that such freedom to pioneer is a valuable resource for our country. Therefore we approve of the attitude of the governing body and we hope that substantial support will continue to be given by the government, but without infringing on the freedom of the institution. However, we suggest that liberal courses be added to the curriculum, so that graduates of the institution may be well-educated men as well as competent engineers.

4. *Visva-Bharati at Santiniketan.*—Founded in 1921 by Rabindranath Tagore, Santiniketan has become a unique expression of his mind and spirit. The " Memorandum of Association " of Visva-Bharati states :—

Objects : " To study the Mind of Man in its realisation of different aspects of truth from diverse points of view ".

" To bring into more intimate relation with one another, through patient study and research, the different cultures of the East on the basis of their underlying unity ".

" To approach the West from the standpoint of such a unity of the life and thought of Asia ".

" To seek to realise in a common fellowship of study the meeting of the East and the West, and thus ultimately to strengthen the fundamental conditions of world peace through the establishment of free communication of ideas between the two hemispheres ".

" And with such ideals in view to provide at Santiniketan aforesaid a Centre of Culture where research into and study of the religion, literature, history, science and art of Hindu, Buddhist, Jain, Islamic, Sikh, Christian and other civilizations may be pursued along with the culture of the West, with that simplicity in externals which is necessary for true spiritual realization, in amity, good-fellowship and co-operation between the thinkers and scholars of both Eastern and Western countries, free from all antagonisms of race, nationality, creed or caste, and in the name of the One Supreme Being who is *Shantam*, *Shivam*, *Advaitam* ".

Membership : " The membership of the Visva-Bharati and of its Constituent Bodies shall be open to all person

irrespective of sex, nationality, race, creed, caste or class ; and no test or condition shall be imposed as to religious belief or profession in admitting members, students, teachers, workers, or in any other connection whatsoever ".

In the last available announcement we have the following information :—

The Society is at present maintaining the following institutions :—Patha-Bhavana (School), Siksha-Bhavana (College), Vidya-Bhavana (Research Institute), Rabindra-Bhavana (Museum and Institute of Researches on Rabindranath), Cheena-Bhavana (Sino-Indian Dept.), Kala-Bhavana (School of Arts and Crafts), Sangita-Bhavana (School of Music & Dancing), Hindi-Bhavana (School of Hindi Studies & Research) at Santiniketan ; and the Institute of Rural Reconstruction and Silpa-Bhavana at Sriniketan. The Society manages its own Press at Santiniketan and the Publishing Department at 6/3, Dwarkanath Tagore Lane, Calcutta.

The supreme control is vested in the *Parishat,* the *Sadasyas* (members) in General Meeting assembled. The Governing Body is the *Samsad,* consisting of members elected by the *Sadasyas* and the representatives of the different departments.

The Commission was impressed with the spirit and with the quality of the work done at Santiniketan. Two elements of the programme seemed particularly valuable, the effort to discover, preserve and transmit the vast elements of old Indian Culture, and the work with the surrounding villages.

The Preservation of Indian Culture.—In times of rapid transition there is a strong tendency to minimize the values of the past, and to look only to the present and the future. What priceless treasures of human culture, in skills, attitudes, folkways and arts have been lost by this habit the world will never know. In India as in few other countries, some of the great cultural expressions of the past still maintain a precarious existence while we face the many problems of a new era. Without friendly attention and a nurture these may die.

It is a main purpose of Santiniketan to search out the living cultural values wherever they may persist, to bring them to light, and to nurture, develop and disseminate them ; so that the new India shall carry with her the values of the old. At Santiniketan we saw this

process under way, in teacher training, in the graphic arts, in literature, music and the dance. We saw a priceless collection of old manuscripts from Tibet and other sources, being guarded and translated. We saw and felt a spirit of graciousness and refinement pervading the institution. We understand that the Central Government has made substantial grants for furthering this project.

Village Development.—" The Institute of Social Reconstruction " was founded at the neighbouring village of Sriniketan in 1921. The hopes for the institution as expressed by Tagore are " to bring back life in its completeness to the villages, making the rural folk self-reliant and self-respectful, acquainted with the cultural traditions of their own country, and competent to make an efficient use of modern resources for the improvement of their physical, intellectual and economic condition ". The Institute conducts a village school, somewhat along basic education lines, and uses it as a *guru* training school ; works on village health and sanitation, with a central dispensary, a clinical laboratory, and by organizing co-operative health societies ; has a department of village welfare which promotes irrigation, seed stores, crafts and improved varieties of crops ; does propaganda for village improvement and collects statistics on village conditions ; makes regional and all-Bengal economic studies ; and works at soil conservation and afforestation.

5. *Jamia Millia Islamia.*—Founded in 1920, the college was distinctly an expression of the nationalist movement, and is an expression of the educational spirit and philosophy of Gandhiji, interpreted with a wide knowledge of world movements in education. Shortly after the founding of the institution the staff members, including the Head, pledged themselves to serve the cause of education for 20 years without ever claiming more than Rs. 150 per month as remuneration for their work. During the long period since then this rate has never been exceeded and seldom equalled, except in a very few special cases, which did not include the head of the institution. In about 1925 the college was moved to " Jamia Nagar " about 8 miles from Delhi, where a substantial beginning of a College plant has been constructed with grants from the Central Government, though the plant is still very inadequate.

The parts of the institution which impressed us most were those of teacher training, and of the extension—adult education—work. To equip itself as a training institution the college has established, in addition to the regular college departments, the following :—

A residential High School along modern lines, with provision for Arts and Crafts, and with emphasis on individual

work ; a residential Primary School which is doing outstanding work in methods of primary education ; a community educational centre, which combines a Middle School and a Community Hall ; an Institute of Adult Education with 5 Centres in Delhi suitable for training workers in that field ; a Teachers' Training Institute for preparing teachers for basic education ; the Urdu Academy, publishing serious literature in that language ; and a book department, publishing children's literature and other publications. (This had a plant and stock valued at 5 lakhs before it was destroyed during the disturbances. It is being renewed).

We were impressed by the quality of the work done and by the spirit of the institution. The development of primary school methods may well set standards for all India. Similarly, the extension—adult education—work at the various centres is creating and demonstrating high standards of effectiveness in that field.

Jamia Millia has become a recognised centre for training teachers and leaders in basic education. In addition to being the accepted institution for training such teachers for Delhi Province it has trained teachers from U.P., Bombay, Assam, Hyderabad, Jaipur, some of the Indian States, and from societies and municipalities undertaking to establish basic education. It also serves as an institution for pioneering and experiment in higher educational methods.

In addition to pressing needs for plant, equipment and salary increases, Jamia Millia has certain other disadvantages. As it is not affiliated with a university, its intermediate graduates are not accepted by the universities. Also with the large demand on Jamia Millia for teacher training it is necessary that additional schools be available to its students for practice teaching. Lack of transportation equipment prevents access to other schools for this purpose, and is seriously limiting the teacher training service of the institution. Visva-Bharati and Jamia Millia need recognition as universities, with the right to grant degrees, and adequate plant and recurring grants to enable them to make their programme fully effective. Since they are in rural areas, they would be particularly suitable as the first All-India Rural Universities.

II.—The Planning of New Universities.

6. *The Value of Variety in Higher Education.*—The full genius of a country can develop only with freedom to create variety. Our university system has not had that freedom. Foreign control could best be maintained by regimented uniformity. Something new and different might threaten control, and therefore was to be looked

upon with suspicion. This regimented uniformity, which originated partly in bureaucratic unimaginativeness, and partly as an administrative convenience whereby a foreign ruler could maintain control with a small administrative staff, because it is all we have known in our universities, has become a habit of mind of Indian higher education. It is not inherent in the nature of good education. Repeatedly we have received suggestions that uniformity and standardization be increased, as though they were prime educational values.

With the requirement which has existed of an academic degree as a condition for appointment to any responsible position in the government service, this demand for uniformity had a very practical, if unwholesome, basis. We have recommended that, except in some of the professions, this requirement be abolished. With that action taken, such need for uniformity will no longer exist.

Each of the institutions we have described, beginning and working against great odds outside the university system, has made and is making a significant contribution to our national life but, at least up to the recent past, under extreme financial privation and hardship. Each of them, so far as it meets the fundamental requirements of our constitution for equal treatment and opportunity for all classes and communities, and so long as it maintains acceptable quality in its work, should receive grants of aid on a par with other recognized colleges and universities, and should be given university status if that is desired. Such support and recognition should be granted without infringement upon the freedom and initiative of the institution.

A live, progressive society must rely, not upon rules of uniformity but upon live, competent judgment of actual merit. To deny capacity for such judgment is to deny possession of the capacity and integrity necessary to encourage the full cultural and spiritual resources of the country. The University Grants Commission in deciding the degree of recognition and support to be given to any institution should be governed, not by the likeness of that institution to others of a standard type, but by its judgment of whether that institution is making a substantial contribution to the economic, intellectual, cultural and spiritual life of India. By such encouragement of quality with variety, the educational resources of India will be enriched.

7. *City Universities.*—It is natural that when a city reaches a population of several lakhs it probably will desire a university of its own. Usually in such a case there are a number of colleges already in existence which are affiliated with some other university, and

occasionally an independent institution, which can be constituted a unitary university.

We may take the instance of the college at Meerut. It is one of the largest units of Agra University, with over 2,000 students. If finances are adequate, and if the authorities of the institution are prepared to undertake the academic responsibility, it might well be converted into a unitary university. Similarly Jubbulpore may develop a unitary university with faculties of arts, science, education and engineering. Kanpur has a number of populous arts, science and commerce colleges in addition to its colleges of agriculture and technology. The possibilities of a university at this city are not remote. In the South, Madras has three colleges which in time might evolve into a city university.

Conditions differ so widely that it would be inappropriate for our commission to go over Indian cities one by one to suggest which local colleges should be given university status, or what new urban universities should be created. This probably should be the work of the University Grants Commission.

The difficulties of developing wholesome and creative academic life in a crowded city are well known. We have referred to some of these in our discussion of Calcutta University.

8. *Rural-Urban Relationship.*—The establishment of rural universities is discussed in the next chapter. Rural and urban universities should supplement each other so that the total needs of the nation shall be most adequately met.

9. *Regional Universities.*—In the past universities have been established chiefly to meet the needs of cities or limited areas, usually where well established colleges had served the needs of higher education, or where a generous donor has offered funds for that purpose. Among recent foundations are Gauhati, Rajputana, Poona, Kashmir, Roorkee and Baroda in the first category, and Saugor in the second.

Since higher education has been the responsibility of provinces and states, little thought has been given to so locating universities that they will best serve the national or cultural regions of India. If we locate on a map of India the natural, linguistic, cultural or economic regions, and then also locate existing universities, we see that some such regions are very much more fully supplied than others. The United Provinces, for example, now has six universities. Madras Presidency has three, each to serve the needs of a fairly distinct area.

The universities of Bombay Presidency are similarly intended to serve different linguistic areas. Baroda and Ahmedabad Universities serve the needs of Gujarat; Poona University serves Maharashtra ; Kannada, the needs of the Kanarese area ; and Bombay serves the great cosmopolitan centre. While these universities in some degree serve natural linguistic regions, such regions often overlap provincial lines, one province having adequate facilities on linguistic lines, and another not. There are some linguistic areas for which little provision has been made.

As to newly constituted administrations, we find that a region like Madhya Bharat will require a university in the near future. At Gwalior and Indore there are strong arts and science colleges, as well as professional institutions. When these two States were separate each had plans for a university, and now the rival claims have delayed the establishment of any.

Vindhya Pradesh has not developed higher education to the extent as some other states have done. Should a university be established in Vindhya Pradesh it will probably be at Rewa, with the Darbar College as the nucleus, though such action may not be advisable in the near future. The political merger of Travancore and Cochin has created a problem for the Cochin colleges, to which we have referred in our discussion of the University of Travancore. Mithila has a linguistic heritage and two important centres of higher education, with probabilities of generous benefactions. If these materialize it should not be difficult to have a university for this area. The Tamil tract has not been fully served by Annamalai, and a teaching-cum-affiliating university may be required at a more central place, such as Trichinopoly. The well established colleges at this place and those at Madura may become constituent colleges, and may have authority to affiliate any urban institutions in the vicinity which prefer to be affiliated with that university, rather than with Madras.

This mention of the problem of regional location of urban universities, even where only political and linguistic regions are involved, indicates the complexity of the issues. In establishing new universities consideration should be given to regional needs, whether the region be linguistic, cultural or economic. As to rural universities, if the problem of regionalism is well handled from the beginning, much confusion may be avoided. By careful planning rural universities may be located so as largely to serve both linguistic areas and areas with similarity as to crops, industrial resources, etc.

10. *Universities from Private Benefactions.*—In our survey of individual universities we have observed instances of institutions established through private benefactions. With changes in our social structure, with the disappearance of Princes and landlords, and with the diminution of the fortunes of private individuals, benefactions will grow less. Should the principle of exempting gifts from income tax be adopted, large gifts might increase. Acceptance of such gifts by the government should probably be conditioned on recognition of the need for the proposed university.

11. *Conditions for Creating New Universities.*—While our Commission is not prepared to discuss each case of possible transition from affiliated or independent colleges to unitary universities, some general comment may be appropriate. There are certain fundamental characteristics which should be inherent in any institution which is to call itself a university and which is to ask for public funds as such.

A university should be free from communal exclusiveness, and its services should be available to students regardless of caste, religious affiliation or social origin. It should be a place of free inquiry, with its windows open to the knowledge and culture of the world. Its spirit should be that of free, sincere search for truth, not of indoctrination in any closed cult.

A university is more than a technical school. It should be a place for providing a student with opportunity for all round well proportioned education for effective living and for citizenship, in addition to preparation for a calling. It may occur that a university shall develop special strength in some particular field, as in engineering or industrial development or in teacher training or in forestry or fisheries. In fact, since no institution can be excellent in everything, it is desirable that areas of special strength be developed at least in all but perhaps the largest of our universities. However, these areas of special strength should be in addition to facilities for all round higher education, and should not be a substitute for such facilities. Unless an institution aims at providing such all round training it should continue as a technical institute and should not aspire to be a university.

It is unfortunate for a university to be established to promote local or personal prestige. It should represent not only actual need but the probability that the use made of the institution and the support granted to it shall justify its establishment as a degree granting institution, and that its existence shall not hamper

the emergence of a more representative or more necessary institution. Wide variations should be allowed and encouraged in the structure, administration, and type of service to be rendered by a university; but quality should be insisted on. Institutions doing perfunctory or mediocre work should not be dignified by university status.

The criteria for appraisal should not be arbitrary rules and regulations, but first-hand appraisal of competence, spirit and achievement. Informal appraisal should not mean laxity of standard. The status of *university* should be assurance of high quality.

12. *University Charters.*—In many countries of the world universities are set up not through Acts of legislature of their parliaments, but through charters granted by the head of the state. This course may also be adopted in our country, at any rate, with regard to the new universities which are established by the conversion of existing institutions. It may be thought necessary that such institutions be given provisional university status before they are recognised permanently as universities. Such charters may be granted by the head of the state on the recommendation of the University Grants Commission. The recommendation of that Commission should indicate the conditions and the time for which the provisional charter is granted. These charters may be made permanent if the Commission is satisfied about the staff, management and quality of work done.

Excess of universities should be guarded against. There should be no arbitrary rule against more than one university in a given area, for the functions of two universities may be so different that they may complement, rather than compete with, each other. However, duplication of similar facilities in an area already reasonably well-served, should be avoided. In case some area or some wide field of interest does not have adequate attention, then in some cases the encouragement of a new university may be in order.

III.—Recommendations.

13. We recommend :—

(1) that during the transition from affiliated or independent college to university status, or during the initial period of a new university, a provisional charter be granted by the President, upon the recommendations of the University Grants Commission, and that in general a permanent charter be granted only after a provisional period;

(2) that Visva-Bharati at Santiniketan, and Jamia Millia at Jamia Nagar, near Delhi, be given provisional charters as universities, and be given suitable capital and recurring grants ;

(3) that in the establishing of new universities freedom be given for pioneering and experiment in educational methods ;

(4) that in planning new universities, both urban and rural, effort be made to get as good distribution as possible with reference to the total educational needs of the country ;

(5) that the University Grants Commission be constituted as the agency for determining the merits of requests for recognition as universities.

CHAPTER XVIII

Rural Universities

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I.—The Background for Rural Higher Education.

1. *A relatively unoccupied Field.*—The conditions of Indian life and government under which the present universities had their origin and development have already been described. It was inevitable that the universities should be influenced by these conditions. They are valuable institutions and are expected to yield good results after necessary adaptations to the changed conditions of a free people. These adaptations and reforms it has been our concern to suggest.

Yet anyone can see that our present universities—besides some qualitative limitations—touch only the fringe of what is required in the way of higher education in the world's newest and most populous democracy. There is a vast field of pioneering before us in the process of evolving new institutions of higher learning which will answer to the needs and aspirations of this democracy.

Such pioneering demands more than improvements in the existing pattern. To require all new universities to grow out of the existing system would be to impose needless and hampering limitations upon our educational possibilities. A chance for new, free beginnings unhampered by the recent historic past, which can take advantage of marked advances in world educational thought and practice, is made possible by the necessary large expansion of educational facilities.

In looking at the problem of new institutions the fact should be kept in view that, as reported by the 1941 census, about 85% of the population of India live in villages. This vast population has been scarcely touched by secondary or higher education, except by the permanent withdrawal from village life of those able young people who have left the villages for the universities. The extreme poverty and lack of cultural opportunity of this population is common knowledge. The course of wisdom is not to deny or to ignore this glaring lack, but rather to create the types of educational opportunity which are appropriate to Indian rural life, and to give a quality and range to that life which will remove the disparity which is now a reality.

There should be no feeling of conflict between existing and new type (rural) universities, any more than between engineering education and medical education. However, because the pattern and spirit of existing universities is so distinctly urban centred,

and because of the tendency of an old and dominant institution to impose its type upon any new institution in a similar field, it is a matter of practical necessity that new universities aiming at extending educational opportunity to the great mass of rural India, and to give vitality and quality to rural life, should have their own independent design and programme. They will have many qualities and methods in common with existing universities, and as they become established there will be general co-operation and interaction. To a large degree the European university, with the offspring institutions in India and America, will be indispensable to the new rural university, but their services should be those of consultation, friendship and advice, and not of authority and direction.

2. *The Significance of the Indian Village.*—As free India begins to plan its course, a great increase of interest in village welfare is in evidence. This is important, not only for the sake of the villages, but for the destiny of India as a whole.

In the course of world history, seldom has the greatness of a nation long survived the disintegration of its rural life. For untold ages man by nature has been a villager and has not long survived in any other environment. Almost every study of the subject which has been made in Europe and America has revealed that as a rule city families survive for only a few generations. Cities grow and thrive only as they are constantly replenished from the rural population. So long as a nation's rural life is vigorous it possesses reserves of life and power. When for a long time cities draw the cream of life and culture from the villages, returning almost nothing, as has been the case in India during the last two centuries, the current village resources of culture and energy become depleted, and the strength of the nation is reduced.

India must decide whether to aim at a widely distributed population, making the villages such prosperous, interesting and culturally rich places, with such range of opportunity and adventure that young people will find more zest and interest, more cultural advantages, and more opportunity for pioneering there, than in the city ; or whether to run to vast centralized industries, with masses of labour taking direction either from the state or from private corporations. Natural drift will not change existing trends. Definite governmental and educational policy and a change of public attitude are required.

Consider the present state of the village. Though there are areas with clean, attractive villages, most of the more than half a

million villages in India consist of mud huts with earth floors, with one, two or three rooms, with unprotected open wells. Houses are crowded along narrow crooked paths which serve also as open drains. These conditions, along with extreme poverty, result in a large amount of water-borne, insect-borne and earth-borne diseases. Less than ten per cent of the villagers are literate to the extent of recognizing their own names on a letter. An average day's work in an Indian village produces probably less than a quarter as much wealth as would a day's work by modern methods. The villages are largely isolated from the world, and so have difficulty in getting a world view.

Picture the kind of village life which should be aimed at. It must be economically prosperous. Its life must not be wasted in primitive habits of production. Full advantage should be taken of modern technical developments. Small scale farming by efficient methods will require only a small part of the human labour needed at present, and production may be greatly increased. Much of the village population will be available for work other than agriculture. Each village, and especially each group of villages, will have a wide range of economic activity. A large part of the industry of the country should be located in villages and small towns. Every village should have good year round transportation, and should be supplied with electric power. Each one should have a piped water supply under pressure, a sewer system and a telephone system.

With good water supply, drainage and sewerage, malaria and intestinal diseases will practically disappear as they have nearly disappeared in certain other countries. Health centres and public health care will nearly eliminate communicable diseases. Household vermin will almost wholly disappear as they have disappeared in certain other countries.

If these economic and hygienic advantages should be secured without corresponding development of character and culture, the change might be loss rather than gain. Economic, cultural and ethical education must go together.

3. *The Possibilities of Basic Education.*—At this fateful moment in our history, we have the extreme good fortune to have had presented to us a pattern and philosophy of education of such universal and fundamental worth that it may well serve as the type for bringing into being the new India which is the desire of many of us. We have no sympathy with hero worship, and feel that there should be no withholding of criticism of an educational plan because it was presented

by our great leader. With some details of Gandhiji's programme of basic education we may not agree. However, taking his concept as a whole it presents the seeds of a method for the fulfilment and refinement of human personality, the wisdom and excellence of which will become more apparent through the years, and will stand the test of time and of criticism. Years of time and vast effort will be required to insure this movement against warped and mistaken expression, and to develop effective skills and methods; yet inherently the concept is one of the world's great contributions to education.

The method outlined in its rudiments by Gandhiji is not just a way of meeting the educational needs of little children. He has stated the essential elements of a universal method of education, from the time a little child shares in its mother's work, through the whole process of growth of personality to the time when the mature man of disciplined mind and character works at the side of the master in the achievement of a great design. The essence of this philosophy is that education should combine practice in the everyday processes of living and working, with more formal training. This is a fundamental concept which is steadily gaining support and application in the educational world.

Gandhiji was not the first to have this vision. Aristotle, Francis Bacon, Milton and Louis Agassiz are among the world's great men who specifically expressed a similar conviction. But in one important respect he differed from most of the others. While their minds caught the vision of a new day, the bookishness of their lives held some of them captive. Therein is Gandhiji's pre-eminence. No sooner was a conviction matured in his mind than he acted on it.

4. *The "Basic Education" Programme.*—To see rural higher education in good perspective it is desirable to have a glimpse at the elementary and secondary education out of which it should emerge. As to the programme of Basic National Education for grades one to five, the revised syllabus published by Hindustani Talimi Sangh about 1947 may be taken as a representative statement. As we have seen this programme in practice in several parts of India it seems to us in the main to be justifying the expectations of those who gave it form. A possible criticism of actual practice is over-emphasis on the one process of producing fabric and cloth. This is highly valuable as a centre for correlation of learning, since clothing, like food and shelter, is a basic human need. Also it provides opportunity for children to experience skilful achievement, and to have first hand familiarity with an economic process from start to

finish. However, in some cases it seems that a more distributed interest and attention to varied processes of rural life would be desirable. Basic education should introduce children to all the chief issues and interests of living. It should not become a routine with spinning and weaving as its main expressions.

These first steps of the basic education programme have been clearly defined and, in some cases at least, given able and inspiring expression. The "post-basic" secondary school programme has been less fully worked out, while that of higher education has not been clearly formulated. Therefore these will be considered in some detail.

5. *The People's College.*—With adoption of the new Indian constitution the achievement of democracy is only barely begun. Fundamental changes of attitude will be necessary before what is written on paper can become the prevailing way of life. One of the key points at which democracy will fail or succeed is in the kind of education which will be made available to the common people.

Even after a vast extension of basic education, a large proportion of Indian rural boys and girls may not attend formal school beyond the seven or eight years of basic education. How, after that, they will enter into the life and thought of the nation, is not only important to them, but may determine whether or not democracy becomes a reality in India. The university, and especially the rural university, has a vital relation to this problem. To indicate what that relationship may be, and how the university may contribute to the further education of this great majority of the Indian people, is essential to an understanding of the right place and work of the rural university.

For helpful guidance in this matter, we may turn to the programme of the People's Colleges of the Scandinavian countries, especially to those of Denmark. Sir Richard Livingstone, England's foremost figure in adult education, called the Scandinavian People's College "the only great successful experiment in educating the masses of a nation."

When the People's College movement was initiated in Denmark a century ago the Danes were a defeated, poverty-stricken, largely unschooled, privilege-ridden and dispirited people. In considerable degree as a result of the People's College movement, the Danish people have risen from ignorance and poverty to about the highest general level of education and well-being of all the peoples of the earth. Their social legislation has been sane and liberal. Danish agricultural practice has changed from a primitive state to among the most scientific and best organized in the world. All this change has been brought about with an increase, rather than a loss, of the human element.

The part which the People's Colleges have played in this transition is suggested by the fact that a third of the rural people attend them, while another third come under their direct influence. More than thirty per cent of the members of the national legislature, and eighty per cent of the co-operative leaders in a country where co-operatives play a dominant economic role, were educated at the People's Colleges. The principal writers of modern Sweden also were educated at People's Colleges rather than at the universities.

A paraphrase of a recent description of the philosophy and method of the Danish People's College will indicate how it might suit Indian conditions, and how the rural university could further its development.

While democracy requires well qualified men and women in positions of importance and authority, yet government by and for the people requires also that fine resources of culture, leadership, and wisdom shall be maintained with good distribution throughout the population. The rank and file of men have often been deprived of their best elements and their potential leadership as a result of a typical attitude toward democracy, which is not that it eliminates privilege, but that it gives everyone an equal chance to "get ahead" of others in the competition to escape from the mass of men and join the more privileged classes.

Important as it is to keep open avenues of development for the specially gifted, society has an even more fundamental need. In leavening bread we do not aim to have the gas in the dough escape from the mass and rise to the top, but rather we desire to trap the gas in small bubbles all through the dough, so that the entire mass will rise with uniform light texture. Our ideal for the gifted person among the common people, that he shall escape into an environment of culture and economic privilege, results in his leaving behind a yet more sodden mass of uninspired and unenlightened people. With this prevailing ideal, the very equality of opportunity of a political democracy accelerates the tendency towards a population composed of subject masses and ruling classes. For a continuing democracy it is essential that our programme of liberal education shall not promote the escape from the common people of the culture which that education generates, but shall inspire able students to remain common people, in and of the people, acting as their servants and leaders, and raising the whole social lump.

A familiar attitude among educators calls for a liberal education for a small elite group, and vocational education for the masses. John Dewey wrote, "I cannot think of any idea more completely

reactionary and more fatal to the whole democratic outlook." Another suggestion is that the shortcomings of such a leadership can be partly cured by liberal colleges drawing potential leaders from all ranks of society, "by making liberal education available to all young people who possess the essential intellectual and personal qualities." Yet, the chief issue is not where young people *come from* to get an education, but where they *go* with their education.

Democracy requires leadership steadfastly loyal to the whole people. Throughout history the people's cause has often been lost by leadership becoming estranged from and even turning traitor to the people, though often it had only recently emerged from the common people. The philosophy of rule by an intellectual elite, which characterised Plato, was the object of criticism by Bishop Grundtvig, originator of the Danish People's College. He wrote: "People in our day shout themselves hoarse about freedom and culture, and that is certainly what we need, but the proposals for attaining them usually have the same fundamental faults as Plato's 'Republic', where the guardians of freedom and culture themselves swallow them both up, so that the people for all their labour get only proud tyrants to obey, to support, and if that can comfort them, to admire and deify."

Leadership which cannot express itself in the shoes of the common man is rather rulership than leadership. Was not that Gandhiji's message? How to achieve intellectual discipline and culture which give quality to leadership, and yet to maintain identity with the common people, is a problem which seldom has been solved. Because the Danish People's College has contributed greatly to that solution, its methods are important. Because that problem in India may profit by a new approach, the rural university may make a significant contribution to its solution here.

It is a general assumption of the intellectual elite that a long period of study with conventional "cultural" subject matter in high school and college is necessary to produce liberally educated men. The People's College challenges that assumption. It holds that education is not identical with formal intellectual training; that men can become educated without being intellectuals, and that intellectuals are not necessarily educated men. Grundtvig wrote: "Scholarship is one thing, and education and fitness for life is another; they may well be united, but not in the case of the majority; they must not be hostile to each other. Scholarship will lead scholars astray if it is not confronted by an education of the people which obliges it to take present-day life into consideration, just as education of the people will soon degenerate into a superficial polish if

scholarship does not keep it alive." Einstein commented: "School is not to promote future officials, scholars, lecturers, barristers and authors, but human beings." Whitehead similarly remarked, "The school course of classics must be planned so that a definite result (a great view of life) is clearly achieved. There has been too great a product of failures on a road to an ambitious ideal of scholarship." The People's College aims at helping people to desire and to achieve the primary values of life, from which other values must be derived. A brief description of the Danish People's College is given in Appendix P.

II.—The Rural Secondary School ("*Post-Basic Education*")

6. *A Residence School Village.*—Doubtless a number of types of rural secondary school will emerge as the general principles of basic education find expression in practcie. Let us picture one type as a continuation of the basic education programme.

Except where there are good reasons to the contrary, the rural secondary school should be a residence school, with the pupils living in hostels, or if feasible, in such houses as would be suitable for good village life. The grounds and streets should be planned, and the buildings planned and built, as nearly as possible like a well-planned modern village. The entire setting should be an example to the students of what their own villages might be like. Secondary school education should not make boys and girls content with living in the villages as they are. It should, however, make them familiar with practical ways of creating new villages, within the reasonable financial and social resources available. The school village should be an example of what is desirable and practical in village planning, construction and operation.

In case an entire family should wish to move to the school village, building and managing its home according to the standards of the school, the children of that family might well live at home. In such case the family as a whole might share in the educational process. There have been a few colleges or secondary schools where the young family and not the individual was the unit being educated.

In some cases it would be desired by students or their parents who reside nearby that the boys and girls should live at home and go to the school each day. This probability draws attention to two sometimes conflicting aims in the establishment and administration of residence secondary schools. On the one hand it is desirable

that the student be in the school village setting where he can see village life as it might be, can free his mind from rigid village tradition, and can have that kind of living together and intimate relations with his teacher which marked the relations of the old time *guru* with his pupils. On the other hand it is highly important that his school experience shall not so divorce him from his village associations that he cannot and will not return to work with the world from which he came. He should be imbued by his school experience with a desire to improve his village, not to escape from it. For some of the boys and girls to continue to live at home might help the school to keep that desirable association, but it would be unfortunate for the students as a whole to do so. Residence schools should not be allowed to wither because of supposed economy to the parents or to the government. The People's College programme with its residence schools has been singularly successful in arousing a desire for progress without leading students to abandon their villages.

Small units of 150 to 200 students will be far better than mass schools of many hundreds. A school for 150 students should have probably 30 to 60 acres of land, depending on circumstances. Perhaps 10 or 15 acres of this should be for school house, hostels, homes for teachers, playgrounds, workshops and industrial sites. The rest should be for agriculture, forest and pasture.

The secondary school village as a rule would serve a group of villages, and should be conveniently located with reference to them. In case of the reconstruction of villages, as hereafter proposed, in some cases provision may be made in them for secondary school plants, with suitable land and environment. In such cases secondary school students might live at home, or part at home and part in hostels, as would be desirable. While every normal boy and girl should have opportunity for continued schooling after the 7 or 8 years of basic schooling, the provisions suggested are estimated to be adequate for the next one or two decades.

The first cost of small residence secondary schools may be higher than buildings for mass education, but not necessarily so. The buildings may be very simple. Research is finding ways to use local materials and labour to make permanent structures. In so far as possible, the school village should be built by the pupils and their teachers working together, with the help of a person trained in village and school planning. During construction of the school village pupils and teachers would live in temporary shelters, or return to their home villages at night. The cost of bringing students by bus each day from the several villages would be eliminated. Nearly all the work of maintaining and cleaning buildings and grounds,

preparing food and doing other necessary work, could be done by the students as part of their practical education. This is less feasible where the students live at home and attend school in large masses.

7. *Learning by Living.*—Residence school students not only profit from their studies but, under the leadership and companionship of teachers of mature character and culture, they may learn a way of life together. It is largely through personal friendships, acquaintances, and mutual trust that society holds together. "The old school tie", a powerful element in social organization, has hitherto been limited to a small social class. The old school ties of residence secondary schools and People's Colleges will be threads of acquaintance and fellowship over larger areas than the village, and will help toward widening social understanding and unity.

The life of the school should follow the course of life of a good village, except that about half the working time would be given to study and about half to practical work. Some work such as cleaning the school village probably should be done by everyone, teachers and pupils working together. There are some kinds of work with which nearly every pupil should become familiar, such as child care, cooking and home keeping for girls, and agriculture and the use of household tools for boys and girls. The school should raise most of its food and should teach boys and girls how to make the land yield as much as possible.

The practical work should include farming, building, carpentry and cabinet making, housekeeping, weaving, street cleaning, and other useful village work. It should also include one or more modern industries, manufacturing goods for sale. So far as training in a modern industry is concerned, a two to four year period of work in a secondary school industry under skilful teaching, along with related study, should produce highly skilled workers, ready to perform many of the more exacting processes in new industries in new secondary school villages. Some students would continue more advanced training.

As boys and girls grow older, the periods of uninterrupted work will naturally grow longer. Rather than work and study for a part of each day it probably will be well to divide the students into two shifts, each shift working or studying alternate days, or more probably alternate weeks or fortnights. It would be desirable for some of the part time work of each student during his secondary school years to be away from the school village, to give him a more representative view of practical life.

8. *The Rural Secondary School Programme.*—Little by little many boys and girls would find desirable callings and would begin to specialize. For many, the secondary school period would complete the schooling and their special training. Others would find it desirable to go to more advanced rural schools or colleges.

In their study periods the pupils should be getting an all-round, well proportioned education. Where feasible the subjects of study should be related to or grow out of the practical work and life of the pupil. However, as boys and girls grow older it will be found increasingly desirable to follow some orderly courses of study, sometimes regardless of their own experiences of the moment. They should become acquainted with the physical environment as disclosed by geography, geology and astronomy ; with the physical sciences in physics and chemistry, and with the world of living things in biology. They should get a general knowledge of the history of their own locality, of India and of the world, and should be introduced to some good literature. They should have enough mathematics to serve their practical needs, and a general knowledge of local and national government. Their studies also should help them to understand the theory of their work. Physical education should be universal. To select subject matter and to distribute the available time among the different subjects, so that these fields shall be covered without overcrowding the students' time, will require thorough preparation by those planning post-basic education.

Even more important than the imparting of information is the development of habits and attitudes of mind and spirit. The habit of openness and honesty is a tremendous source of national strength and so are habits of goodwill and fair play. In training teachers for secondary rural schools these qualities should be the first consideration. The scientific attitude, that is, the habit of free, critical inquiry, of looking into actual facts and causes, rather than credulous acceptance of rumour or tradition, would put new life into India.

In its industrial work the rural secondary school should aim at creating a new industrial tradition. It has been assumed that the industrialist works chiefly for profit, whereas the teacher works chiefly for service. There is no inherent reason why these different callings should be carried on with different motives. The tradition should develop that rural industrialists deserve reasonable and decent living and economic security, but that beyond these standards all earnings should go to strengthening the industry, accumulating reserves for expansion or against depression, founding new industries for new secondary schools, improving quality, lowering prices, or raising wages and bettering working conditions. It is a curious

delusion that amassing a fortune gives greater satisfaction than does good citizenship. Rural education should aim at changing that tradition.

Even where there are programmes for village improvement which provide for nurses, health advisers, agricultural extension workers and others to live and work in the villages, such plans are handicapped, or even break down, because of the unwillingness of such persons to live in the villages. Secondary school villages, planned and built according to approved standards, would be suitable centres for rural clinics, rural library service, agricultural extension work, co-operative banking, and other village activities. Such services could become parts of the secondary school training programme. Through the school system they should be integrated into a unified process of social education, and should not continue as competing activities of unrelated departments. The secondary school village thus might well become the cultural and service centre of a group of villages, and might go far to insure the success of these various services.

9. *Self-Support in Basic Education.*—Basic secondary education can develop a large element of self-support, and can be better education than that which is wholly supported by taxation. A substantial degree of self-support may not be achieved at once, for the methods of that type of education, and competence in economical production, must be mastered. No specific amount of self-support should be made imperative. The educational development of boys and girls should be the first consideration, but experience in competent and responsible production will be found to contribute greatly to such development. Generally the land, buildings and equipment should be supplied from public funds. If boys and girls do part of the work of building, then their labour should be paid for at a fair rate from public funds, for otherwise, in order to be self-supporting, it may be necessary for them to use all working time to produce for immediate use or sale, and the educational value of building might be lost.

For basic secondary education to be in some degree self-supporting, it is necessary that living standards of great simplicity should prevail. The tradition of our country has largely been of hovels and palaces, with almost nothing in between. The basic education secondary school should be an example to young people of the truth that simple, inexpensive living can be clean, convenient and attractive living. Self-support must come partly by restricting wants to very simple living, and partly by increasing income.

Fear is sometimes expressed that any element of self-support may lead to exploitation of child labour. To provide boys and girls with all-round education, and to train them for specific competence

in some field, is a good way to reduce exploitation. The entire spirit and atmosphere of the basic education programme, and the sensitiveness of democratic government to charges of exploitation, can be relied on to protect them from excessive toil.

10. *Division of Labour in Basic Secondary Schools.*—The division of labour in secondary schools should probably be different from that in the first years. Probably some labour should still be shared by all, such as a half hour for general clean-up in the morning. Most work should be divided, with each student having his or her definite duties. The duties of a student may be changed from time to time so that he or she can become acquainted with many kinds of work.

A convenient way of dividing work perhaps would be to have most students work and study every other week or fortnight. In one such period about half the students would be at work and the other half at study. During the following period those who had been studying would work, and those who had been working would study. Thus one set of teachers would teach two sets of students. Some members of the staff would give their whole time to supervising students' work. This programme has been used successfully in some secondary schools for thirty-five years. In some cases the alternation of work and study might be influenced by the seasonal needs of agriculture and climate.

Every boy and girl in basic and post-basic education should be able to perform almost any common, necessary duty. In line with the spirit of the new Indian constitution every boy and girl in a basic and post-basic education school should make the following resolve : I shall never ask nor accept from any person any menial service that I would not gladly do for him or her, or for others.

11. *Short Time Technical Courses.*—Perhaps associated with secondary school villages should be provisions for short term technical courses, somewhat parallel with People's College sessions. For practical workers in many fields to have even one or two weeks a year of training and experience in a good shop with good supervision might in many cases quite change the degree of understanding and skill with which they would do their work. If mechanics, craftsmen and technicians of all sorts should develop the habit of attending short courses in their special fields for from a week to a month each year or two, receiving instruction and example from the most competent persons in each field, the general quality of technical work and of craftsmanship might be greatly improved. Such short courses might be given at both secondary school villages and at rural universities. Different schools or rural universities might develop reputation for skill and leadership in different fields.

12. *The Duration of Rural Education.*—The duration of the rural post-basic or secondary school period should be related to the entire span of education. One suitable distribution of this entire span would be :

8 years for basic education,

3 or 4 years for post-basic or secondary education,

3 years for college,

2 years post-graduate university work for the master's degree.

An alternative distribution of time would be 7 basic, 4 post-basic, and 3 for college. As the value of education is better realized, and as the material resources of India increase, there probably will be a tendency to reach a programme of 8 years basic education, 4 years secondary education and 4 years of college to the equivalent of the bachelor's degree. The expression " college " in this connection refers not only to education leading to an academic degree, but any education beyond the secondary school, whatever may be its form.

While it probably is desirable to consider a regular period, as 3 or 4 years, for post-basic or secondary schooling and 3 or 4 years for college, these would be only general guiding standards. Some students entering secondary school may be well prepared for their life work in two years, some in three years. The aim of the school should be to help the student to most effective living, so far as the educational resources justify preparation. In a four year secondary school programme for instance, there should be no sense of failure for the student who comes to the end of his productive period of study in one or two or three years.

III.—Post-basic (Secondary) Education and Village Industrialization

13. *Industrialization is Inevitable.*—One of the issues which troubles the basic education movement is the extent to which modern industrial processes shall be welcomed in the villages. India will surely industrialize. To pump irrigation water by muscle power as in India requires more than a hundred times as many man-hours for a given result as by modern methods. The difference in labour between hand and machine spinning is very great, and nearly all village weavers prefer the machine spun yarn. (Hand weaving has greater possibility for survival than does hand spinning.) The makers of handmade padlocks in India are finding constantly greater difficulty in competing with machine-made padlocks from other countries. The village blacksmith is losing to the big factories in Indian cities his trade of making agricultural implements.

Industrialization is one of the great basic changes in human living, perhaps as fundamental as the change from hunting to settled agriculture. It cannot be stopped, but can be guided into wholesome channels. The energy and devotion needed to guide industrial development in India, so that it shall serve widespread decentralization on a high economic, social and spiritual level, should not be dissipated in trying to prevent it.

The next few years may largely set the pattern of Indian industrial life for a long time. If there is clear and prompt recognition of the need and possibility for distributing much of modern industry through the villages and small towns, the prosperity of modern industry may be diffused through the whole country. If there is effective opposition to specialized modern industries in the villages, on the ground that each village should be a self-contained, independent unit, these may concentrate in the cities.

14. *Decentralized Industry*.—A very large amount of small unit industry is feasible, though a part must be in large units. People looking at America from a distance see only the towering industrial giants. Yet there are many thousands of thriving small industries in that country, and there would be more but for the cult of size and power which seeks to grow large, just as a ruler might wish to add to his dominions, even though the administration might not thereby be more efficient.[1]

Over half the business of America is done by small and medium sized firms. These are on the whole more profitable than the great industries, as is disclosed by several public and private studies.

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[1] The efficiency of American manufacturing rests largely on the use of machine tools in place of manual skill of craftsmen. The machine tool industry is greatly decentralized. While there are perhaps half a dozen large firms, all together they employ probably less than a fifth of those employed in the machine tool industry as a whole. The others are employed by hundreds of smaller firms, scattered over many parts of America. Some of these small firms are located in villages, some in small towns, some in cities. Many thriving machine tool factories employ only ten to fifty men, others up to five hundred.

The grinding wheel industry, also important to manufacturing, is scattered over a large number of small plants. One company, which uses cheap electric power to manufacture carborundum, has about 3,000 employees. The rest of the grinding wheel industry is divided among many firms employing from half a dozen to five hundred men.

Many parts of the textile industry are also highly decentralized. This is true of factories making carpets, "rayon," yarn, men's shirts, women's dresses, underwear, and hosiery. Many of these factories are in villages or small towns in various parts of America. These are only illustrative cases.

It is interesting that the foreign goods which have been best able to invade American markets during recent decades were not made in the great industrial plants of England or pre-war Germany, but were products of small scale industries of Switzerland and Japan. Today about 80% of the watches sold in America are made in the relatively small industries of Switzerland, while some of the great American watch factories have difficulty in surviving. Yet Switzerland has about the highest wage scale and living standard in Europe.

While some industries are growing larger, others are decentralizing, and many are moving from cities to rural areas. Small and medium sized business is very much alive in America, and can be in India.

15. *Industrial Inter-relations.*—In the modern world the village will steadily lose the status of an independent, self-contained economic unit, but at the same time it can become far more important as a basic unit of society, out of which the larger society is built. Village people want books, radios, watches, bicycles, metal goods, electric power, and railway travel, which cannot be produced by each village for itself. The world is becoming constantly more inter-related. That inter-relationship will be best if each of the units has a vigorous, definite existence of its own, while it co-operates with others.

It is a mistaken aim to atomize India into nearly unrelated villages, as though interdependence were itself an evil. A better social aim is the growth together of independence and of interdependence, each where it is most appropriate. Not the *greatest* degree, but the *best* degree of local self-sufficiency should be the aim.

If the village does not industrialize, the actual result will be that urban industry will take over all those processes that are most profitable, leaving to the village the unprofitable operations. As industrialization spreads over the earth it becomes increasingly true that handicraft workers receive very small pay for their work, and even then the products are commonly luxury goods, sold to wealthy people.

The development of secondary rural education should presume decentralized, well-balanced, progressive industrialization. In fact a considerable part of the vocational training of post-basic schools should be to prepare boys and girls no longer needed in agriculture for other callings. The industrial development of India is being handicapped by the lack of workers who are skilled in hand and eye to fill positions not requiring full professional training. As rural industries develop, the rural secondary schools should go far to meet that need.

IV.—A Programme for the Reconstruction of Indian Villages.

16. *The Future of the Village.*—Without some picture of what the future of the Indian village may be, the future of rural education cannot be clear. In trying to understand the problem of secondary and higher education for the people of India who live in its 600,000 villages, we seem at first to come up against a stone wall which makes

progress all but impossible. That " stone wall " is the present condition of the Indian village. Anything in the nature of broad, liberal education in the modern spirit will surely make villagers more keenly aware of the inadequacy of the village, and in many cases of the futility of trying to make it livable. Except as some generally effective way is found for dealing with this condition, any plans for rural higher education will in effect be plans for driving more people from the village, and therefore for the further impoverishment of the rural life of India. A clear cut, comprehensive and adequate solution of this problem is imperative. The following statement, we believe, outlines such a solution.

Over a large part of India the village is obsolete, not fit for human habitation. Of the 600,000 villages in India, there are probably many thousands to which this statement does not apply. In a few localities villages are reasonably fair places of residence. But in the main it seems to be true. While the destiny of India depends on the vigour, the health, the culture and the intelligence of the villages, the village *has* declined and *is* declining. Only if the realities are faced will there be a chance to guide the course of events toward a great destiny for the nation. The problem of the village in most cases requires its complete relocation and reconstruction.

One of the greatest handicaps of the Indian village is the lack on the part of the villager of any clear, full picture of what a good village might be like. If there should be a fine modern village here and there, if the villager should get a clear picture of what a good village would be like, and if he should learn by practical example of the steps he could reasonably take to have such a village, then his day-by-day comparison of that village with his own would lead him to have a powerful desire to get what he has learned to be practical and desirable. As to every phase of village life it should be the business of rural education to develop clear pictures of what are desirable and practical living conditions, and to provide examples of such conditions.

This picture of village life should not be limited to well-planned physical layout and to varied opportunity to make good livings. Of no less importance are habits of neighbourliness and good will, of co-operation, and of dependable, fair dealing with one another.

The situation of the village is not hopeless. In fact, we are constantly impressed by the vast potential human resources ready to become alive and to spring into action if they are but freed and encouraged by public policy and by private example. So far as material resources and human energies are concerned, the wholesale relocation and reconstruction of our villages is entirely feasible.

The great material wealth of mankind is not its stored wealth, its hoarded gold, its cities, railroads, ships and factories, but the current year by year production of wealth by the people. The potential wealth-producing capacity of men is almost incredibly great. What are lacking are not natural resources or human energy, but a clear mental picture of what is desirable and possible, and the character, skill, experience and culture necessary to realize such possibilities. These qualities it is the main business of rural education to provide. India has such vast natural and human resources that, given these qualities, the average Indian might have many times as much wealth at his disposal as he now possesses. If even ten per cent of our potential resources should be realized, India and all her people would be rich.

17. *Reconstruction.*—The construction of new and fine villages throughout India may become a great national movement. Moreover it may be carried through to a considerable extent without the financial help of the central or provincial government. As public fiscal policy can be readjusted, public money received from the taxation of rural lands should mostly be returned for the use of rural education and for village improvement. Except for great undertakings beyond the limits of local control, the carrying through of public projects may usually be more economical and more productive by local initiative. The handling of such projects by local initiative may become a school for democracy, thrift and responsibility. As an example to be generally followed in this particular kind of development, the T.V.A. (Tennessee Valley Authority in America) may be misleading. Despite the widespread publicity of the T.V.A. and the use of expressions concerning democracy, the T.V.A. is not fully in the line of the democratic tradition.

There is a tradition in the United States which has worked and spread so quietly that its vast achievements have been scarcely realized, even in America. This is the habit of creating local or regional limited governments for special purposes. These little special purpose governments are often in the form of special assessment improvement trusts. They are created by the people interested, for such purposes as reclaiming wet lands, creating parks and recreation districts, and in some cases for developing water supplies for groups of towns.

Following such a method the central or provincial government might provide the laws necessary for such local, democratic initiative, so that villages or groups of villages may work out their own

plans. Indian provincial governments should use a considerable part of the funds received from land taxes to improve the condition of the villages. The central government may provide samples of good development, so that the people can see what is possible. To get such a movement started, in any district the central or provincial government may agree to pay half the cost of the first undertakings, and perhaps a quarter or a third of the cost of other undertakings. Also the central or provincial government, and especially the rural university, can carry on research as to the best methods. Governments might well have power to prevent borrowing money for any plan which is not honestly or competently developed, or which would probably be a loss or a disappointment to the people. They could develop a variety of plans and suggestions, and provide skilled advice which might be beyond the reach of local organization. Many villages are too small to provide the range of services, interests and associations necessary for most satisfactory living. Research to determine the most desirable size might result in consolidation of some of the smaller ones, and the grouping of villages with some services in common.

With proper legislation providing for village trusts for such reconstruction, a village could rebuild itself quickly, and the added tax, spread through twenty years, probably would be no more than is now paid for various poor services. The land of the villagers would be security for the cost. Much of the work they could do themselves under skilled direction.

If such a movement is made possible by wise legislation and by a limited number of sample cases, it will spread so fast that for many years there will not be enough village planners, sanitary engineers, house builders etc., to meet the demand. In some parts of India dissatisfaction of villagers with present living conditions and desire for radical improvement are becoming strong. Unless they are met by an effective programme they may soon grow into menacing political discontent.

The very process of planning and rebuilding the villages can be made a programme of basic education for the whole village population. Here the counsel of rural universities and of the central and provincial governments will be desirable. Many meetings will be necessary to discuss village plans. The needs of sanitation must be understood. The best design of homes must be worked out. The width of streets must be decided. The space needed for a basic school must be talked over. Locations for village industries must be provided.

A movement for village reconstruction should not be forced beyond what people appreciate and want. The village people should not be coerced or dictated to, but they should be helped by competent specialists. So far as possible these specialists should be men and women from villages who have been trained in rural secondary school, rural colleges and rural universities. Such a movement would grow slowly at first. This would be necessary for there would not be an adequate supply of men and women trained for planning and building. A decade or two might well be spent in getting well under way, learning from the first cases how to be more competent.

Each year in the natural course of events numerous villages are relocated and rebuilt. This is made necessary by the construction of reservoirs in river control projects, by the caving of river banks, by removal to escape malarial conditions, in constructing new villages for refugees, and for a variety of other reasons. Each such change can be made the occasion for replanning and rebuilding villages on modern lines. The central government and each provincial government should provide in one of its departments a person or a small staff to keep in touch with all such cases, and to advise on plans and methods of relocation. The central government staff should include a research centre for community planning, methods of construction and methods of administering relocation and reconstruction.

The villages of India are a vast reservoir of human energy, intelligence and aspiration, much of it now wasting in futility. Indian boys and girls start out in life alert, curious, eager to live and to learn. The dull hopelessness of their environment kills this spirit in many, so that as men and women they become conservative and inert. Give the villager a picture of a good life, with health, cleanliness, variety of occupation, place and time for recreation, and a feeling that his hopes may be fulfilled, and the energies of the people will make a new rural India, a fit and fine dwelling place for a great people.

V.—Rural Colleges and Universities.

18. *General Characteristics.*—The general advancement of rural India will call for an ever increasing range and quality of skill and training. To supply these and to meet the requirements of an educated citizenship, a system of rural colleges and universities is necessary. A new beginning is desirable, with freedom to create a distinctive tradition as to purposes, spirit and methods.

The crowding together of thousands of undergraduates, as in the case of some existing universities, is highly undesirable. A way should be found to combine the advantages of small resident undergraduate

colleges where there are close relations between teachers and students, with the advantages of fully developed universities which offer a wide range of specialized and advanced educational opportunity to advanced students, or to other students with specialized interests.

As a general type of arrangement, it is suggested that a rural university should include a ring of small, resident, undergraduate colleges, with specialized and university facilities in the centre. The suggested number of students for each of the undergraduate, resident colleges is about three hundred, and that of the maximum over-all enrolment for colleges and university combined, about twenty-five hundred.

Each college of about three hundred students would have separate teaching staff and facilities so far as its basic courses are concerned, except that undergraduate libraries, laboratories, gymnasiums and hospital facilities might be shared by as many colleges as should prove desirable. The aim of each college would be to equip its students with a general educational foundation, and to encourage the development of individual aptitudes and interests as they appear.

In some cases undergraduate students would be well qualified to undertake professional or other specialized studies in some particular fields. It should be possible in such cases for them, while still undergraduates, to carry single courses in university or professional school. Each student should have opportunity, without sacrificing the core of general education, to begin specialization at whatever time he is ready for it, even at the risk that he might later change his field of occupational interest. Some students have clearly defined occupational bents at an early age. They will make better progress, take more interest, and have more normal personal development if such dominant interests find early expression. Similarly, there should be no hard and fast lines between undergraduate and post-graduate education. A student might be an undergraduate in most subjects, and yet in some field of special interest he might be doing post-graduate work. The college and university programmes should be flexible enough to serve such cases.

19. *Work and Study.*—In rural colleges, as in rural secondary schools, general studies should be united with practical courses, so that those who attend college shall become cultured, educated men and women, and also persons trained and skilled in some field, or prepared for further advanced training. Probably the greater part of rural college students will not have further schooling, except for "refresher courses", and so their college years should include occupational preparation. Also as with rural secondary students,

rural college students may spend about half their time at studies and half at practical work. The working and study periods probably should be longer than in a secondary school, the intervals of work and study being perhaps 5 or 10 weeks each. A part of the staff of the college or of a group of colleges should be engaged in securing suitable working opportunities, and in supervising students during their working periods. Such working positions might be located anywhere within several hundred miles, in a great variety of fields. This programme of work and study has been developed in some places in Europe and America through more than thirty-five years, and has been successful. In America a steadily increasing number of universities, technical institutes and similar institutions now use it. The colleges as a rule may develop their own industries and other economic activity, which might well be more specialized and more exacting than those of rural secondary schools.

There is a tendency in university circles to look upon alternating work and study, and also upon " practical " courses, especially those calling for manual craftsmanship, as suited to inferior minds, while professional courses are for intellectuals. This separation of skill of hand from skill of mind has greatly retarded the mastery of the physical world and has been a major cause of poverty, especially in India. Practical work should not leave the worker in a " blind alley " without continued opportunity for advancement. Practical skill should be looked upon as equal in dignity and worth to purely intellectual skill. Like scholarship, it should be recognized with ascending grades of achievement and opportunity, so that a man who develops high ability with hand and eye may have an open road to advancement equal to that of the purely intellectual worker.[1]

20. *The Curriculum of the Rural University.*—The great cultural values are not peculiarly rural or urban, but are common to all humanity. As described in this report under *General Education*[2], a common core of liberal education may be assumed for the rural university as for any other, though the methods used in teaching and in learning may be different. This common core would include substantial introduction to the fields of mathematics, chemistry, physics, geology, astronomy, biology, physical education, psychology, the social sciences, philosophy, and language and literature.

As to advanced and specialized subjects, no field of human concern should be foreign to the rural university. The rural setting should be seen as a suitable environment for the full sweep of human

[1] Some great contributors to astronomy have based their work on their unusual mechanical skill. Charles F. Kettering, famous research man, head of research for General Motors, and recent president of the American Association for the Advancement of Science, in his early years worked out his own ideas with his own hands as a mechanic. So did Henry Ford.

[2]. Pp.118 ff.

interests. Yet interests and possibilities especially related to rural life should have explicit attention, and the way should be prepared for their realization.

While there should be many common elements for all students, the curriculum should be made to fit the needs of individuals, and not the students made to conform to an arbitrary curriculum. By the time students reach college, if they have been well advised and have had the practical work experience described elsewhere, many of them will have definite ideas of the work they want to do. With the help of their teachers they can combine courses from several fields to meet their individual needs.

For instance, a man planning to direct public water control projects may combine engineering, law, business, and public administration. Lawyers as a rule are quite unable to understand technical engineering matters, while engineers are commonly ignorant of law. Both are frequently unacquainted with business methods. Yet all these elements are needed for effective management of such projects. A combination of law, engineering and business in some cases has made men exceptionally able to handle important work which involved them all. None of these courses would be standard and conventional, but those elements in each field would be included which taken together would make well-proportioned preparation for the person concerned. A large number of such possible combinations might be cited. Many students without definite aims would follow more general programmes. However, to become competent in all the chief activities associated with some field is a great help to personal success and to social usefulness.

Rural secondary and higher education should constantly explore the changing needs and opportunities of Indian life, and should make sure that their programmes are planned for the conditions of today and tomorrow, and not for those of yesterday. Both the general programme and the combinations of studies of individual students would be influenced by such continuing inquiry. Intelligent appraisal of current needs for men in various callings, and of the prospective supply of such needs, will be generally effective in guiding students' vocational choices, and will be far better than arbitrary limitation of vocational opportunity.

The flexibility and adaptability of the programme outlined above require freedom for creative education. That freedom would be destroyed by any system of uniform, external examinations.

In education the rural university student can prepare for administration and leadership in primary, secondary and higher rural education. In agriculture he can prepare for leadership in production, marketing, breeding, and agricultural co-operation. He can prepare to participate in agricultural extension work, in the organization of youth and adult study and working groups, and in agricultural research. He can become skilled in the processes of planning and rebuilding agricultural villages, in the consolidation of small agricultural holdings, and in many other phases of rural life. The student interested in industry should study the design and improvement of machines and processes. He should study the methods by which many small industries can co-operate in purchasing, research, marketing, in business ownership and management. The curricula of professional and specialized subjects should first of all deal with those fields which are or should be of major concern to rural life.

The student of the rural college or university should not be isolated from the life of his time. Should he make a deliberate choice of urban living, no barriers should be put in his way. Rural life should be made so interesting and productive, so full of opportunity and adventure, that it will be preferred. The aim of rural education should be to make it so.

Rural India is a great reservoir of creative life, but the pattern that life shall adopt is not yet determined. The future society may take any one or more of many directions, some better, some worse. The range of possibilities may have few limits except the capacity of men's minds and spirits to create and to live by patterns of excellence. So far as our rural population is concerned, the development, enlargement and refinement of that design should largely be the work of rural education. The curriculum of the rural university should be guided by that responsibility.

VI.—Some concerns of Rural Universities

21. *Rural Professions.*—In a rural India in process of active development some new or relatively new professions will be useful. Some of these may be peculiarly rural and others common to both urban and rural life. Among professions or branches of professions in the development of which rural universities may well participate are various phases of water control engineering, soil improvement engineering, temperature control engineering, food processing technology, "chemurgic engineering", ocean products technology, mineral processing, rural industrial counselling, rural public administration, rural social welfare, rural land and village planning, social engineering, rural sociology and anthropology, rural arts, and rural medical service. Suggestions as to possibilities which the rural university might prepare for in the professions are made in Appendix Q.

22. *The Social Attitudes of the Rural Professions and of Business.*—Our education must find its guiding principle in the aims of the social order for which it prepares, in the nature of the civilization it hopes to build. Education is the great instrument of social emancipation by which a democracy establishes, maintains and protects the spirit of equality among its members.[1]

In the past it has been assumed that men who are successful in the professions and in business are justified in acquiring as much wealth as they can without dishonest means, and to live on whatever scale of expenditure such wealth makes possible. A democratic society requires a very different spirit. While recognizing such factors as the greater time and expense required for professional education or for business preparation, and the greater obligations of men in responsible positions which require expenditures, the spirit of democracy will not make these the excuse or justification for a standard of living far beyond the hope of achievement of the general population, even in a well-ordered society. The tradition should grow among successful men that simple and unostentatious living which is not a burden to society is the only way of life which comports with the spirit of the new India.

All universities, urban and rural, should share in bringing about such a change of spirit of business and the professions. Yet it is the part of practical wisdom not to lose any opportunity afforded by favourable conditions. The creation of rural universities, inheriting the spirit with which Gandhiji infused the basic education movement, offers opportunity for giving a fresh impulse to such a change.

23. *What is a "Profession" in Rural Education?*—Members of some of the older professions may be inclined to take offence when the word profession is applied to many fields of work. The difference between professions, practised primarily for human service, and business and industry followed for profit, has largely disappeared Also, the time has passed when scholarship and disciplined preparation were the marks of only a few traditional fields. Any useful calling for which a high degree of preparation has been needed and has been made, and which is pursued in a spirit of service to the public, deserves the name of profession. The spirit of democracy will not tolerate the monopoly of that term by any privileged group. It is a mistaken idea that there is any field of necessary human effort which will not respond to a high quality of preparation, and so deserve the name of profession. Just as the despised calling of scavenger has emerged as the honoured profession of sanitary engineer, so can every

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[1] See Chapter II.

necessary human work become in truth a profession. The rural university should strive constantly to increase the number of useful occupations which in outlook, skill and spirit of service have been raised to the status of professions.

24. *Rural Education and the Great Traditions.*—There are several great traditions in human culture, each the product of a long past. Their existence depends on unbroken continuity through the centuries. If the continuity of one of these traditions is completely broken, centuries may be too short a time for its rebirth. Some cases will illustrate this.

The great tradition of agriculture is the accumulation of centuries. No man who is cut off from that tradition becomes a good farmer in one generation, though a business man may succeed in farming by the help of workmen who do have that tradition. Another great tradition is that of medicine. No person can discover or invent the art of medicine for himself. It is the same with business. Even the self-made business man profits by the experience of those who have gone before. Another great tradition is that of home making. No woman becomes a great home keeper solely from her own genius. At the back of a finely managed home are centuries of accumulated tradition of home making.

Scholarship is another of the great traditions. With all their faults, existing universities and other similar institutions are almost the sole carriers of the tradition of scholarship. Organized knowledge and disciplined thinking cannot be quickly created anew, no matter how great the native intelligence, nor how strong and sustained the enthusiasm.

Here, then, we have the dilemma of the rural university. It would modernize agriculture, but must work with farmers, often with men burdened by ignorance, credulity and conservatism, while they possess the wisdom of the ages. The rural university would build rural industry in a spirit of good will and mutual helpfulness, and without being controlled by the traditional passion for maximum profit. The rural university would build a health service for the people of rural India in the spirit of social service, moderate income, and a sharing of the common lot, but it must begin with doctors, some of whom have been trained in the doctrine that the physician is a superior person who, if he can, will live in luxury even at the expense of patients who cannot.

Finally, the rural university must have scholarship, and this it can get chiefly from the existing universities which, along with the great tradition of scholarship, also are full of unimaginative formalism,

pedantry, petty ambition, timidity or cowardice, and lack of practical contact with real life.

Out of these materials, how is the rural university to realize its aims of building a new and fine rural India, and of releasing the vast creative energies of Indian life, now so tightly bound in the chains of privilege, prejudice, exploitation and ignorance ? There are two things the rural university movement can do. First it can define and clearly express its own purposes. This is one of the primary duties of those who would build a new rural India. Second, it can constantly search all India and all the world for those exceptional persons who, while making themselves masters of one of the great traditions, such as agriculture or medicine or business or scholarship, have nevertheless held to the greatest of all the great traditions, that of committing their lives and all they have to the service of their fellow men. As such men find each other and work together they can create the basic elementary school, the rural secondary school and the rural university, and through them the new India.

25. *The Great Traditions of Common Life.*—In primitive societies children learned chiefly from watching, listening to, and imitating their parents, their neighbours, and older children, and by their own experience. Little by little people learned that some special skills or knowledge can best be taught by formal, organized education. Thus schools and universities came into existence. Yet always there remain the informal skills, disciplines and judgments of everyday life, which are not included in formal education, but must be picked up by the child from informal, everyday experience. The parts of the child's development which are formally planned come to seem important to those who plan and administer the schools, while the parts which are left to informal contacts are overlooked as of small importance, or are forgotten. Yet they continue to be very important, perhaps more important than all the matter included in formal education.

Rural education, like all education, should not limit itself to the processes of the schoolroom, but at every stage from primary school to university should insist that pupils and students shall learn also from the great traditions of common life.

These great traditions are among the most priceless treasures of mankind, of more value than our material possessions. One of the chief criticisms of the present system of education is its tendency to rely on verbal description rather than on actual participation, and thereby partly to lose the essence of the great art of living. The

process of violent revolution, which would destroy the social structure to do away with inequality, may destroy precious, hard-won elements of the great traditions, and set back humanity many centuries toward barbarism.

The method of basic education, from elementary school through the university, on the part of the student calls for intimate participation in the life through which these great traditions are expressed and perpetuated. By such participation, as well as by formal learning, he comes to inherit fully those traditions. It is the part of teaching and leadership to share with the students in this participation, and to so guide and inform it that the great traditions, in the process of being inherited, shall be purified, enlightened, enlarged, and made to express the basic aspirations of men for understanding, for justice, liberty, equality and fraternity, and for effective mastery of their environment

26. *Rural Education and Research.*—Just as democracy cannot be maintained by a small educated class, but must be based on the education of the whole people; so the full advantage of modern science cannot be secured by a few able scientists working in a few well-equipped laboratories, but requires also that a spirit of open minded, critical inquiry shall pervade the whole population. The poverty of India is largely due to the general absence of this spirit. Much work is performed in the same way generation after generation, though the methods might be greatly improved. This is due not to inborn limitation, but to long standing traditions of conformity. Our children have curiosity and active interest. Our scientists have proved their ability. If the spirit of free, critical, objective inquiry becomes general, not only will everyday working methods improve, but from the many boys and girls with open, inquiring minds great scientists in many fields will emerge.

Development of the spirit of free inquiry should be a chief aim of basic education, and of the secondary and higher education which grow out of it. More important than the teaching of any particular subject is encouragement of the spirit of free inquiry in every field.

Our thoroughly trained scientists with their well equipped laboratories are highly important to our country. Many important problems of rural life cannot be solved by simpler means. Rural universities should have such scientists in such laboratories. But that is only part of the story. Not all research must wait for university degrees or for scientific equipment. Wherever there is an active inquiring mind there is opportunity for research.

Some of the great scientific and practical developments of modern times have been the work of men who had neither university degrees nor scientific equipment. The Wright Brothers built their first airplane in a bicycle repair shop while some world famous scientists were declaring that such flight was impossible. Gregor Meden whose discoveries of the laws of inheritance place him among the foremost of biological scientists, was a village priest with no laboratory but a garden patch and some pigeon coops. Langstreth, who advanced the art of bee keeping more than all men before him for two thousand years, was a preacher who had to give up his preaching because of serious illness, and who used for research the occasional periods when he was well enough to work. His laboratory was his little workshop, his carpenter tools, and his hives of bees. James Watt, Robert Owen and George Stephenson, pioneers of the industrial age, were men of little or no schooling and without scientific laboratories.

The day is not past for such pioneering. There are many pressing problems, some of them among the most important which face our rural life, which require little or no laboratory equipment or scientific apparatus for their study. Library facilities are generally essential to save waste of time in repeating work other men have already done, but in some cases a few hundred rupees or even less will provide the necessary published material. Some men will let the years slip by as they mourn the lack of research facilities, while others with no more opportunity, but with strong scientific spirit and desire for human service, may be making scientific history. The rural university will do well to accomplish what it can with what it has, even though its facilities seem inadequate.

This is not a suggestion for reducing public expenditures for research. Much that is highly important for national welfare requires laboratories with complex and expensive equipment. A nation which omits such investment will pay heavily for its neglect. But along with research requiring large investment there are very many opportunities for men of scientific temper, opportunities which need not wait upon large appropriations.

In Appendix R are some suggestions for varied research projects of great importance, most of which can be worked at with very simple laboratory equipment, or with none at all.

VII.—*The Government of Rural Colleges and Universities.*

27. *A Distinctive Pattern.*—Since rural education must evolve its own distinctive pattern, there is no need to follow traditional forms in educational administration. One general policy should be observed, namely, that rural education should be administered in the main by persons who have been directly concerned with rural life and with rural education of the modern type as recognized by the basic education movement. However, to guard against the tendency for a new movement to become another orthodoxy with its own static dogmas, the administration of rural universities would do well to include a substantial minority from entirely outside its field, to contribute objective judgment and criticism. In the long run it may prove desirable for all education to have a common structure and common direction. Yet, the new rural education should maintain independence and self-direction until it is mature and stands with self assurance and equality. At least for a few decades while it is establishing its own tradition, spirit and methods, it should be free to create its own pattern and organization. The following is suggested as a general way of organization.

28. *Rural Education Councils.*—In each province, or in a group of small provinces, there should be a rural education council. This should be made up in the first place of leaders in rural education who should determine the basis of membership. Thereafter the council should have a democratic government. At first this may be an undifferentiated organization. In the course of time, the membership probably would organize into a number of sections, one concerned with pre-basic education, one with basic education, one with post-basic education, one with the college and university level, and perhaps one concerned with research.

Also there should be an all-India Rural Education Council. The Hindustani Talimi Sangh now serves that purpose, and could be enlarged. This in time would have sections concerned with the different levels of education, and doubtless would develop other special sections, such as on general education, on vocational and professional education, on work programmes in education, and on student counselling. Quite probably basic education would be chiefly guided by provincial councils, college and university education by the national council, and post-basic (secondary) education by both. These councils, or their appropriate sections, would be the recognized

appraising and accrediting agencies for rural education. They would carry on educational research and would strive to raise the quality of rural education.

29. *Autonomy.*—No matter how sound the underlying principles are, the development of techniques will take time. While the philosophy and methods are being developed, the rural university will be a place of pioneering experiment. Each institution should be autonomous, free to work out its own programme in its own way. Heads of departments, at least, should prepare their own syllabi with the approval of the academic council of that college or university, and should test the achievement of their students in their own way. Each institution should determine what credits or certificates or other evidence of completion of work its students should receive. There should be no external examinations.

To encourage high standards of education, it would be desirable for each level of the rural education programme, primary, secondary undergraduate college, and graduate university, to have one or more appraisal committees, appointed by and reporting to the appropriate section of a rural education council, to make periodical examinations and appraisals of each institution in its class, and to issue a report through the rural education council describing the quality of work being done at each. Such a report should state with reference to each institution :

1. Just what it claims to be doing.
2. How it is succeeding in doing it.
3. What the facilities are in plant, staff, finance etc.
4. What other quality or lack of quality is evident.
5. Whether or not it should be accredited.

The report concerning each institution, before it is published, should be submitted to that institution so that any errors of fact may be corrected. Only accredited institutions should be eligible for membership on the council. In the long run the periodical publishing of such appraisals would furnish strong incentive for improvement without killing creative initiative in the institution.

The councils or their appropriate sections would determine which schools at each level should be accredited, that is, recognized to be of such quality that their graduates, with the approval of the head of the institution, should be accepted as qualified for entrance to schools of the next higher level. Each accredited school would determine the fitness of individual pupils or students for entrance to institutions of the next higher grade.

The Rural Education Council of some backward province might set relatively low standards for the post-basic (secondary) schools of that province. Such provincial standards might allow students to go from any accredited school to any college or university in that province. At the same time, the national council might have more rigorous standards, so that only a smaller part of the secondary schools in that province would be accredited to approve their graduates for entrance to any university in all India. Such dual accrediting operates successfully in America. Students from relatively commonplace schools in some states are admitted to colleges and universities in that state, but students from the smaller and more rigorously selected list of the national or regional council have national or regional acceptance. Schools with only state accrediting are looked upon as second class, and constantly strive to qualify for wider recognition. In some progressive states, standards within the state are more rigorous than those for the region or the nation.

Each institution above the basic education school should be free to limit enrolment to the number it can reasonably accommodate,and to select the best of the applicants. The cure for inadequate educational facilities is more facilities, and not the overcrowding of those already existing. It is better to give good educational opportunity to one hundred students than to give a travesty of education to two hundred. So long as students are being accepted, the general public will assume that satisfactory education is being provided. Where a large number is refused entrance for lack of accommodation, the public will bestir itself and provide more facilities.

30. *Rural University Administration.*—The rural university might well have two governing bodies. First, a small *academic council*, consisting of perhaps a dozen members of the staff chosen by appropriate means, should formulate policies and programme for the academic and related affairs of the institution, sometimes acting through suitable committees. It would deal with educational policies, curricula, inter-relations of fields and departments, student counselling etc., but would not undertake the day-to-day business and administrative management of the institution. Meetings and action of the entire faculty might well be a source of information and of advice for the academic council.

Student participation on the academic council and its committees has in some cases been found to be an enlivening, stabilizing and unifying influence. Progressive recognition and encouragement of student participation, as competence and responsibility are demonstrated, is a desirable aim.

The current administration of the university would be in the hands of the vice-chancellor with a few chief academic and business assistants, such as the academic dean, the dean or director of practical work, and the treasurer or bursar. They should meet periodically to clarify plans and programme. Such focusing of day-to-day administration is important. The academic council is poorly adapted to administrative duties.

The second governing body might be called the *executive council*. It would be the over-all authority to direct university policy and to pass on the major acts and proposals of the academic council and administrative staff. It would not handle details of educational or business administration, but would control general policy and programme. It should meet perhaps three to six times a year, a part of each meeting being solely for its own members, and a part in joint meeting with the academic council and the vice-chancellor and his chief assistants. Such joint meetings help all parties to be well informed.

The choice of members of the rural university executive councils will largely determine the quality of the institution. Except perhaps for co-opted members, most members should be persons who for, say five years have been directly concerned with rural life and in most cases with rural or basic education. Such a provision is necessary to prevent rural education from being dominated by existing tradition. However, as already stated, a minority might well consist of leaders in other fields who would have outside viewpoints.

The primary aim in selecting members of the executive council of a rural university should be to secure :

1. General competence, character, judgment and experience, free from and superior to political or academic cliques, or partisan inclination or influence.

2. Acquaintance with and active interest in rural India and rural education.

3. General, broad cultural and educational interests.

4. Good administrative judgment.

5. Simplicity of personal tastes, habits and expenditure.

6. A variety of types and interests, so that the council shall have universality of outlook.

As to the specific process of choosing members, and as to the specific make-up of the council, the rural university should not be bound by precedent.

Except for the vice-chancellor, none of the other usual elements of college governments, such as court or chancellor, will be needed. The entire content of medieval university ceremony, ritual and

regalia, much of which emphasizes academic hierarchy, may be omitted in the new universities. They are in some degree incompatible with the new spirit of India. The new university should develop its own traditions which should be outgrowths of its own genius and spirit, and that of the new India. In the determination of grants by central and provincial governments and in other public relations the procedure recommended elsewhere in this Report may well be followed.

31. *The Relations Between Rural Secondary Schools, Colleges and Universities, and the Existing Universities.*—It is important that there be no unnecessary barriers between the existing and the new type of institutions. Students who are capable of doing so should be able to move from one type to the other. For this to be possible we will require an attitude of tolerance and adjustment on the part of each, with liberalization of legislation dealing with higher education. Students from the older type of Indian secondary schools may find themselves at great disadvantage in a rural university where most of the students are from rural secondary schools. The rural university should be reasonably tolerant of such limitations where there is evidence of general character and ability, and desire to overcome such handicaps. Similarly the older universities should accept able and sincere students from rural secondary schools, even though their education has not followed the prescribed pattern of the older secondary schools. There should be no legislative barriers to such practice. The actual records in other countries of good students going from one type of institution to another justifies such mutual tolerance.

32. *How to Get the Rural Education Programme Under Way.*—The criticism will be made that while the programme here outlined would be a desirable one, India does not have the resources to put it into effect. Under the programme of free India, university facilities must be increased. The only question is where and how. Similarly facilities for secondary schooling must be very greatly enlarged and extended, with vastly increased opportunity for vocational education. The suggested programme for secondary schools will be an economical and effective means to that end.

Most provinces are already committed to the principles of basic education. Each of them might well establish a number of resident secondary school villages, and they might cooperate in establishing one or more rural universities. Similarly, the central government might well establish several resident secondary school villages and a rural university. The growth of the new system will depend largely on the supply of suitable teachers. The central government or the provinces might establish one or more training schools for teachers for this programme.

The Gandhi Memorial Trust might well establish several secondary school villages over India, and one rural university, staffing them with persons trained in existing training centres and with others who are sincerely committed to the principles of basic education. That might help to insure that the spirit of Gandhiji would find expression. Also it would be appropriate for persons of means to make possible the establishment of a number of such institutions.

It will be no disadvantage for the programme to have varied, independent beginnings. Different men and agencies, working somewhat independently but in co-operation, will give a variety and fullness to the programme which no one of them could provide alone. However, the next few years may largely set the type of Indian education for the next half century. The new type secondary schools and universities should be vigorously developed as an essential element of the educational expansion on which the future welfare of India depends.

33. *Co-operation with Other Agencies of Government.*—The governments of free India and of the various states and provinces are showing interest in rural conditions, and are considering many plans for improving rural life. These plans include rural health service, agricultural extension work, boys and girls agricultural club work, rural library service, and the promotion of rural industries. If each of these develops independently of the others there will be much duplication of expense, a tendency to conflict and jealousy, and much loss of value.

There would be very great gain if all these agencies should work through the rural educational institutions. The secondary school village might well be the local centre for all these services. In that way suitable housing and living conditions would be provided, secretarial help, transportation etc. could be pooled, and local officials having business with some of the agencies would find them all at one place. More important than these economies would be the fact that secondary school students would be in constant touch with these agencies. The nurses, librarians, agricultural agents and promoters of industry might share in the teaching and in the direction of practical work. Thus the resident secondary school village would be the educational and cultural centre of a group of villages.

Similarly, the rural university could be the regional centre for all such rural service agencies. Rural workers and directors would profit by rural university associations, faculty members of the universities would profit by constant contact with those directing the field work, and university students in their part time work could assist rural workers and could be in training for similar service. It would be a great loss to India for the varied rural services to develop without such co-ordination with rural education. The co-ordination suggested

will call for some changes in the administrative machinery of the central and provincial governments. Also it would demand that those chosen for rural services should be competent and interested in rural life, chosen on merit only, and not political appointees. It would be tragic to have secondary school and university students living under the influence of mediocre rural social workers chosen for political reasons or by favouritism.

VIII.—Conclusions

34. *Education in Hope and Courage.*—Of all the barriers to a great development for rural life, almost none is as great as the prevailing vogue of pessimism and futility. The greatest and most pernicious myth in all India is this myth of futility and helplessness. Our country is throbbing with creative life and power, which is ready to burst into action if this myth is exploded.

One of the chief duties of all education from the earliest years to post-graduation is to dispel the prevailing attitude of futility and hopelessness, and to educate our young people in hope and courage. The chief limitation of India is what she expects of herself. Life in the present world and in India is so complex that no one can make an analysis and plan a sure course. The outcome will not depend on external circumstance, but upon the spirit of our people. Faith, hope, goodwill and courage are themselves among the most powerful causes of events. For education to arouse these qualities in the people will be a greater gift, and greater factor in national destiny, than would the discovery of vast oil fields or sources of atomic power.

35. *A Feasible Programme.*—It is appropriate that in the inevitable expansion of higher education in India, a fair proportion of the additional facilities be directed to meeting the needs and developing the opportunities of rural areas. The conditions necessary for initiating the programme are present. There are among Indian educators and among educated constructive village workers today enough qualified men and women to staff one or two or three such universities with persons who have the necessary preparation, outlook and spirit. Boys and girls who have been through basic education schools are approaching the age when they will be ready to continue basic education methods at a higher level. By the time the new institutions are ready, a qualified, suitable student body will be pressing for entrance.

36. *Recommendation.*—We recommend that special attention be paid to the development of higher education in rural areas along the lines indicated.

CONCLUSION

1. The Primacy of Education in India. 2. Our Problems. 3. Expenditure and Investment. 4. Unanimity. 5. Statistical Data. 6. Our Hope.

1. *The Primacy of Education in India.*—Education is no exotic in India. "There is no country", says Professor F. W. Thomas "where the love of learning has so early an origin or has exercised so lasting and powerful an influence." Years ago, Sir Alexander Johnston wrote a letter to Mr. Charles Grant, President of the Board of Control, in the following terms:—"Education has always, from the earliest period of their history, been an object of public care and of public interest to the Hindu Governments on the peninsula of India. Every well-regulated village under those governments had a public school and a public school-master. The system of instruction in them was that which, in consequence of its efficiency, simplicity and cheapness, was a few years ago introduced from Madras into England and from England into the rest of Europe. Every Hindu parent looked upon the education of his child as a solemn duty which he owed to his God and to his country, and placed him under the school-master of his village as soon as he had attained his fifth year. The ceremony of introducing him for the first time to the school-master and his scholars was publicly recorded and was attended with all the solemnity of a religious observance; a prayer being publicly offered upon the occasion to the figure of Ganesa, the Hindu god of wisdom, which was at the head of every Hindu school, imploring him to aid the children in their endeavours to learn and become wise."[1] The country has had an uninterrupted succession of teachers and scholars from the early Vedic age.

2. *Our Problems.*—We are to-day faced with great problems, national and social, the acquisition of economic independence, the increase of general prosperity, the attainment of an effective democracy over-riding the distinctions of caste and creed, rich and poor, and a rise in the level of culture. For the quick and effective realisation of these aims, education is a powerful weapon if it is organised efficiently and in the public interest. As we claim to be a civilised people, we must regard the higher education of the rising generation as one of our principal concerns.

3. *Expenditure and Investment.*—We have set forth the objectives of university education; we have stressed the need to broaden and equalise opportunity for higher education, to assist able but financially handicapped students. We have suggested the essential organisational changes. We have made proposals for the improvement of the

[1] *Oriental Annual* (1836) pp. 31-32.

quality and status of teachers. Many of these proposals will mean increased expenditure but this increase, we are convinced, is an investment for the democratic future of a free people. There is no freedom without knowledge. "We shall know the truth and the truth will make you free." With all the earnestness at our command we solicit the Government of India which charged us with this important task, the Provincial Governments, who have the responsibility for maintaining most of our universities, and the people of India to give their very earnest and sympathetic consideration to the financial needs of the universities, and assure them the funds without which no improvement is possible.

4. *Unanimity.*—In a report covering the wide field of higher education, made by any ten men of widely varied background and experience, it is inevitable that variations of opinion, outlook and emphasis should exist. Our report expresses a sincere effort to get at the essence of the issues in a spirit of mutual respect and tolerance, and not an attitude of indifference on the part of individual members to their own personal views and convictions. The report is not a compromise between various opinions. We jointly and unanimously adopted the conclusions reached.

We must apologise for the fact that certain ideas which seemed to us to be of special importance are dealt with repeatedly in this report.

5. *Statistical Data.*—When drafting a report of this kind, certain statistical data must necessarily be taken into account. The figures which we give are based on official data, the accuracy of which we were not in a position to verify. We did not consider it part of our task to undertake the numerous investigations required for the compilation of new statistics.

6. *Our Hope.*—The shortness of the time at our disposal prevented us from extending our investigations as widely as we should have desired. We recognise that the observations made by us in person are an insufficient basis for large generalisations. We thought it wiser to concentrate our attention on the major defects of our university system as revealed by our witnesses and on measures which would tend to remove them.

We have been deeply impressed by the remarkable degree of agreement among our educationists and public men both as to the urgency of educational reform and as to the general lines upon which such reform should proceed. There are some who, often amid

difficulties and discouragements, are labouring to promote reform. They need not feel that they are isolated individuals. They represent a large and growing body of opinion, which needs only to act together in order to be irresistible. Seldom have the authors of a report owed so much to so many. It is with a sense of sincere gratitude for the help that has been so readily given to us and of earnest hope that the consideration of this report to which we now respectfully invite the attention of the Governments of India and the Provinces as well as the authorities of the universities, may lead to good and lasting results, that we conclude this report.

Sd. S. RADHAKRISHNAN (*Chairman*)
,, A. L. MUDALIAR
,, ARTHUR E. MORGAN
,, J. F. DUFF
,, J. J. TIGERT
,, K. N. BAHL
,, M. N. SAHA
,, TARA CHAND
,, ZAKIR HUSSAIN
,, N. K. SIDHANTA (*Member Secretary*)

APPENDIX A

LOG-BOOK OF THE UNIVERSITY EDUCATION COMMISSION

DELHI.

6-12-1948 Inauguration of the University Education Commission by the Hon'ble Minister for Education, Maulana Abul Kalam Azad Sahib.

7-12-1948 to 12-12-1948 Preliminary meeting of the Commission.

13-12-1948 Interviewed

Sir Maurice Gwyer, Vice-Chancellor.
Shri S. Ratnam, Treasurer.

Deans

Dr. V. K. R. V. Rao, Faculty of Arts.
Dr. R. C. Majumdar, Faculty of Science.
Shri Sivasubramanian, Faculty of Law.
Lt. Col. R. Vishwanathan, Faculty of Medicine.

14-12-48 Visited the following institutions—

St. Stephen's College.
Indraprastha College for Women.
Hindu College.

Interviewed—

University Professors—

Dr. S. Dutta, Professor of Chemistry.
Dr. Ram Behari, Professor of Mathematics.
Dr. P. K. Kichlew, Professor of Physics.
Dr. S. N. Sen, Honorary Professor of History.
Dr. Kothari, Honorary Professor of Physics.

University Readers—

Dr. B. N. Ganguli, Reader in Economics.
Shri V. Shibayev, Reader in Russian.
Dr. J. J. Chinoy, Reader in Botany.
Dr. M. L. Bhatia, Reader in Zoology.
Dr. P. C. Biswas, Reader in Anthropology.
Dr. F. C. Auluck, Reader in Physics.
Dr. P. L. Kapur, Reader in Physics.
Dr. R. N. Rai, Reader in Physics.
Dr. N. K. Saha, Reader in Physics.
Dr. B. D. Jain, Reader in Chemistry.
Dr. J. Shankar, Reader in Chemistry.
Dr. R. P. Mitra, Reader in Chemistry.
Dr. Hamid Ali, Reader in Law.
Shri M. S. Shahani, Reader in Law.
Shri S. Das Gupta, Reader in Library Science.

Honorary Readers who are Heads of University Departments—

Dr. Lakshmi Dhar, Reader in Sanskrit, Hindi and Bengali.
Shri Said Ahmed, Reader in Arabic, Urdu and Persian.
Shri A. Bhattacharya, Reader in English.
Dr. N. V. Bannerji, Reader in Philosophy.
Dr. S. R. Ranganathan, University Library.

15-12-48 Visited the following institutions—

College of Commerce.
Ramjas College.
Hans Raj College and
College of Nursing.

Interviewed—

Principals

Dr. D. Raja Ram, St. Stephen's College.
Dr. N. V. Thadani, Hindu College.
Shri G. N. Singh, Ramjas College.
Shri M. M. Beg, Delhi College.
Dr. G. L. Datta, Hansraj College.
Miss V. Thakurdas, Miranda House.
Miss M. Craig, College of Nursing.
Miss B. Das Gupta, Acting Principal, Indraprastha College for Women.

16-12-48 Visited the following institutions—

Delhi College.
University Buildings.

(Further interviews with Delhi educationists from 13th to 16th April, 1949).

MADRAS—*19th December, 1948.*

20-12-48 Visited the following institutions—

Queen Mary's College.
Presidency College.

Interviewed—

Teachers of the University—

Dr. B. B. Dey.
Dr. R. Balakrishna.
Dr. T. S. Sadasivan.
Dr. R. Vaidyanathaswami.
Dr. C. P. Gnanamuthu.
Dr. George Kuriyan.
Shri R. Bhaskaran.
Dr. G. D. Boaz.
Dr. C. Kunhan Raja.
Shri R. P. Sethu Pillai.
Shri K. Ramakrishnaiya.
Shri M. Mariappa Bhat.

Dr. C. Achyuta Menon.
Dr. M. O. Thomas—Librarian, University Library.
Dr. M. Abdul Haq—Principal, Presidency College, Madras.

21-12-48 Visited the following institutions—

St. Christopher's Training College.
Government Muslim College.

Interviewed—

Principals of Colleges—

The Rev. Jerome D'Souza, S. J.
Shri R. Krishnamurti.
Shri D. S. Sarma.
The Rev. Dr. A. J. Boyd.
Shri K. Swaminathan.
Mrs. T. Nallamuthu Ramamurthi.
Mrs. G. Parthasarathi.
Miss K. N. Brockway.
Shrimati M. Lakshmi Amma.
Rev. T. R. Foulger.
Shri V. R. Ranganatha Mudaliar.
Rev. Mother M. Lilian.
Shri K. Krishna Menon.
Shri K. Kuruvilla Jacob, President, Headmasters' Association.
Mrs. Mona Hensman.

22-12-48 Visited the following institutions—

Pachaiyappa's College.
Loyola College.

Interviewed—

Shri P. Kodanda Rau—(Servants of India Society).
Shri K. V. Krishnaswami Ayyar.
Shri P. N. Srinivasachari.
Shri T. R. Venkatarama Sastri.
Dr. S. R. U. Savoor.
Shri K. A. Nilakanta Sastri.

23-12-48 Visited the following institutions—

Women's Christian College.
Meston Training College.

Interviewed—

Shri S. Natarajan } South Indian Teachers'
Shri M. S. Sabhesan. } Guild, Madras.
Rao Bahadur Dr. T. S. Tirumurti.
Shri K. Balasubrahmanya Ayyar.
Dr. K. K. Chintan Nambiar.
Shri S. K. Yegnanarayana Ayyar.

24-12-48 Visited the following institutions—
College of Engineering, Guindy.
Madras Christian College, Tambaram.

Interviewed—

Lt. Col. S. Paul.
Dr. M. A. Govinda Rau.
Dr. R. V. Rajam.
Dr. A. S. Mannadi Nayar.
Shri S. Viadyanatha Mudaliar.
Shri Alladi Krishnaswami Ayyar.

27/28-12-48 Inter-University Board of India, 24th Annual Meeting.
29 to 31-12-48 Inter-Universities Conference.

2-1-49 Interviewed—

The Hon'ble Chief Justice P. V. Rajamannar.
Syndicate Committee—
Shri S. Govindarajulu Nayudu.
Mr. Basheer Ahmed Sayeed.
The Rev. Dr. A. J. Boyd.
Shri D. S. Reddi (Director of Public Instruction, Madras).
Sir C. P. Ramaswami Ayyar.
Shri Abdul Hameed Khan.
Shri T. K. Duraiswami Ayyar.
Shri R. N. Selvam (President, College Teachers' Association).

(Further visits and interviews from 26th to 28th March).

HYDERABAD—*3rd January, 1949.*

3-1-49 Interviewed—

Nawab Ali Yar Jung Sahib—Vice-Chancellor.
Shri Samiullah Shah, Dean, Faculty of Engineering.
Prof. Ziauddin Ansari, Professor, Civil Engineering.
Prof. V. M. Gadgil, Professor, Electrical Engineering.
Prof. Mohammed Athar, Professor of Surveying.
Prof. Abid Ali, Professor, Mechanical Engineering.
Shri Sajad Mirza, Secretary to Government Education.
Dr. Raziuddin Siddiqi, Director, Research, Osmania University.

4-1-49 Visited the following institutions—

Engineering College.
Agricultural Farm.
Model Room.
Agricultural and Veterinary College.
Central Laboratories and Department of Applied Chemistry.
Engineering College Workshop.

Interviewed—

Dr. Hashim Amir Ali Khan, Principal, Agricultural College.
Prof. Baquar Hussain, Agricultural Agronomy.
Major Habeeb Khan, Principal, Veterinary College.
Khan Bahadur Hameed Khan, Anatomy Dept.
Shri Mohamed Faizuddin, Director of Public Instruction.
Shri Fazlur Rahman, Deputy Director, Public Instruction.
Shri Mir Ahmad Ali Khan, Head of the Department of Training.
Dr. Shendarkar, Registrar.
Malik Sardar Ali, Reader, Training Department.

5-1-49 Visited the following institutions—

Press.
Science College.
Arts College.
Library.
Translation Bureau.
Hostels B and C, and Dining Halls and Staff quarters.

Interviewed—

Dr. Syed Husain, Dean, Faculty of Science.
Prof. M. Sayeeduddin, Head of the Department of Botany.
Shri Satyanarayan Singh, Reader, Zoology.
Shri Syed Mehdi Ali, Head of the Department of Physics.
Prof. Ram Lal, Principal, City Intermediate College.
Dr. Nazir Ahmad Taher, Chemistry Dept.
Shri Satyanarayan, Reader, Physics.
Shri Ahmeduddin, Reader, Geology.
Shri Sitaram Rao, Chemistry Dept.
Dr. Khalifa Abdul Hakeem, Dean of the Faculty of Arts.
Dr. M. Nizamuddin, Head of the Department of Persian.
Prof. M. S. Doraiswami, Head of the Department of English.
Dr. Yousuf Hussain Khan, Head of the Department of History.
Dr. I. N. Topa, Principal, Mahboob Intermediate College.
Prof. M. Abdul Qadir, Head of the Department of English.
Dr. Jafar Hasan, Head of the Department of Sociology.
Dr. A. Sharma, Head of the Department of Sanskrit.
Shri Imtiaz Husain Khan, Reader, Commerce.

6-1-49 Visited the following institutions—

Medical College.

Interviewed—

Dr. S. A. Rahman, Dean of the Faculty of Medicine.
Prof. Ali Husain.
Dr. Munawar Ali.
Dr. Mufti Shah Nawaz.
Dr. Yousufuddin Ansari.
Dr. S. P. Sahgal.
Nawab Azam Jung Bahadur.
Shri Syed Ali Akbar.
Prof. Husain Ali Khan.
Mr. Preston.
Professor Abdur Rahman Khan.

7-1-49 Visited the following institutions—

City Intermediate College.
Women's College.
Nizam College and Laboratory.

Interviewed—

Shri Swami Ramanand Tirtha.
Shri Ramchander Naik.
Shri Mir Akbar Ali Khan.
Shri Kashinath Rao Vaidya.
Shri B. Ramkrishna Rao.
Shri Kotisvaran.

NAGPUR—*8th January, 1949.*

8-1-49 Visited the following institutions—

College of Science, Nagpur.
Central College for Women.

9-1-49 Visited the following institutions—

Nagpur Mahavidyalaya, Nagpur.
Hislop College, Nagpur.
S. B. City College, Nagpur.

Interviewed—

Lt. Col. Pandit K. L. Dubey (Vice-Chancellor, Nagpur University)
Lt. Col. N. Ganguli, Dean of the Faculty of Arts.
Dr. K. Krishnamurti, Dean of the Faculty of Science.

10-1-49 Visited the following institutions—

University Departments of Geology, Political Science, and Bio-Chemistry.
University College of Law.
Laxminarayan Institute of Technology.

Interviewed—

Shri U. Misra, Registrar, Nagpur University.
Dr. M. A. Moghe, Head of the Department of Zoology.

Dr. S. A. Saletore, Professor of Applied Chemistry (Organic).
Lt. Col. V. Srinivasan, Principal, Medical College, Nagpur.
Dr. M. R. Cholkar, Member, University Court.
Shri D. G. Moses, Principal, Hislop College.
Shri S. L. Pandharipande, Principal, S. B. City College, Nagpur.
Dr. N. G. Shabde, Principal, Mahakoshal Mahavidyalaya, Jubbulpore.

11-1-49 Visited the following institutions—
Government Engineering School, Nagpur.
Medical College, Nagpur.
College of Agriculture, Nagpur.

Interviewed—
Dr. V. S. Jha, Dean of the Faculty of Education and Secretary to Government, Education Department, C. P. and Berar.
Dr. T. J. Kedar, Advocate and Ex-Vice-Chancellor, Nagpur University.
Dr. A. N. Kappanna, College of Science, Nagpur.
Dr. Sir M. B. Niyogi, Chairman, Public Service Commission and Ex-Vice-Chancellor, Nagpur University.
Prof. S. V. Puntambekar, Bar-at-Law, Head of the Department of Political Science.
Dr. Raghu Vira.
Shri S. N. Agarwal, Principal, G. S. College of Commerce, Wardha.
The Hon'ble Shri Justice K. T. Mangalmurti.

CALCUTTA—*12th January, 1949.*

13-1-49 Interviewed—
Shri S.N. Mitra, Secretary, Post-Graduate Council, C.U.
Shri J. K. Chaudhuri, Principal, Vidyasagar College.
Shri M. N. Bose, Principal, R. G. Kar Medical College.
Rev. A. Verstraten, St. X'aviers College.
Miss S. E. Rani Ghosh, Gokhale Memorial College.
Mrs. Lila Latika Banerjee, Victoria Institution.
Mrs. Tatini Das, Bethune College.
Miss Sunitibala Gupta, Lady Brabourne College.
Shri A. K. Dutt Gupta, Campbell Medical College.
Shri S. Maitra, Calcutta, National Medical College.
Shri K. Sen, Lake Medical College.
Shri D. C. Chakravarti, Calcutta Medical College.
Shri S. N. Roy } Charuchandra College.
Shri S. Ganguli. }
Shri D. G. Chattaoraj, Subhas Institute of Culture.
Shri S. Bhaduri, Sanskrit College.
Shri H. S. Chatterjee }
Shri P. K. Guha } Surendra Nath College.
Shri D. Chakraborti. }

Shri P. K. Bose, Bangabasi College.
Shri K. D. Sen, Shri S. P. Mukherjee, Shri K. N. Sen — Asutosh College.
Shri K. C. Addy, St. Paul's C. M. College.
Shri N. Sastri, Muralidhar Girl's College.
Shri Rev. John Kellas, Scottish Churches College.
Shri M. L. Bhaduri, Shri N. N. Das — Maharaja Manindra Chandra College.
Shri A. C. Karkoon, University Law College.
Shri G. C. Webster, St. Joseph's College.
Shri A. Sen, City College.
Shri P. N. Maulik, Jaipuria College.
Shri A. N. Bose, Teachers' Training Department, C.U.
and the Vice-Chancellor and the Syndicate.

Visited the following institution—
Asutosh College.

14-1-49 Visited the following institutions—
Presidency College.
Indian Statistical Institute.
Bangabasi College.
Victoria Institution.
Bose Institute.
University College of Science.

15-1-49 Visited the following institution—
Santiniketan.

16-1-49 Visited the following institution—
Sriniketan.

17-1-49 Visited the following institutions—
College of Engineering and Technology, Jadavpur.
Bengal Engineering College.
Indian Museum.
Royal Asiatic Society.

Interviewed—
Principals of Engineering Colleges at the Bengal Engineering College.
Representative students of the Bengal Engineering College.

18-1-49 Interviewed—
The Hon'ble Dr. B. C. Roy, Premier.
The Hon'ble Mr. N. R. Sarkar, Finance Minister, and
The Hon'ble Rai H. N. Chaudhury, Education Minister.

Visited the following Institutions—
R. G. Kar Medical College, Belgachia.
Calcutta Medical College.
Tropical School of Medicine.
All-India Institute of Hygiene.

19-1-49 Interviewed—

Dr. Jadunath Sarkar, Ex-Vice-Chancellor.

Post-Graduate Teachers of the University—

Prof. M. Z. Siddiqi, Arabic & Persian, Islamic History and Culture.

Prof. Niharranjan Ray, Ancient Indian History and Culture (Fine Arts).

Prof. Satkari Mookerjee ..	Sanskrit.
Dr. Haridas Bagchi	Mathematics.
Dr. Nalinaksha Datta	Pali.
Prof. Indubhusan Banerjee ..	History.
Prof. Mohinimohan Bhattacharjee	English.
Prof. Sunitikumar Chatterjee ..	Comparative Philology.
Prof. Hemchandra Raichaudhuri	Ancient Indian History and Culture.
Prof. Dwarkanath Ghosh ..	Economics.
Shri Benoykumar Sarkar ..	Commerce.
Prof. K. P. Chattopadhyay ..	Anthropology.
Prof. Girindrasekhar Basu ..	Psychology.
Dr. Stella Kramrisch	Ancient Indian History and Culture.
Prof. Srikumar Banerjee ..	Bengali.
Prof. Sushilkumar Maitra ..	Philosophy.
Dr. Sarojkumar Basu	Economics.
Dr. Nareshchandra Ray ..	History.
Prof. Debendranath Banerjee ..	Political Science.
Shri Nagindra Nath Chandra ..	French.
Dr. Rashbehari Das	Philosophy.
Dr. Satishchandra Chatterjee ..	Philosophy.

Teachers of affiliated colleges—

Shri P. K. Guha	Surendranath College.
Shri Ranada Chakravarti ..	Howrah N.D. College.
Principal P. K. Bose	Bangabasi College.
Shri Sukumar Bhattacharya ..	Asutosh College.
Shri Nirmalchandra Bhattacharya	Scottish Churches College.
Shri Ramanimohan Ray ..	Surendranath College.
Shri Somnath Maitra ..	Presidency College.
Dr. Sudhangsu Guha Thakurta Shri I. J. F. Pereria	Central Calcutta College.
Shri Dwarkanath Mukhopadhyay	Vidyasagar College.
Shri D. C. Roy	Vidyasagar College.
Shri Puranchandra Neogi ..	St. Xavier's College.
Shri N. K. Bose	Jaipuria College.

Principals of Medical and Law Colleges.

Vice-Chancellor and the Syndicate.

(Further visits to Calcutta University institutions from 11th to 14th February).

ALLAHABAD—*20th January, 1949.*

20-1-49 Visited the following institution—
Agricultural Institute.

Interviewed—

Dr. D. R. Bhattacharya, Vice-Chancellor.

Dr. Amaranatha Jha, Chairman, U. P. Public Service Commission and Member, Executive Council, A. U.

Dr. H. N. Kunzru, Member, Executive Council, A. U.

Dr. M. H. Faruqui, Member, Executive Council, A. U.

21-1-49 Visited the following Institution—
Science Laboratories.

Interviewed—

Shri Parmanand ..	.. Secretary, Board of High School and Intermediate Education, U. P. and Secretary, U. P. Grants Committee.
Shri S. N. Mathur ..	.. Retd. Principal, Normal Schools, U. P.
Prof. A. C. Mukerji ..	.. Dean, Faculty of Arts.
Dr. Shri Ranjan ..	.. Dean, Faculty of Science.
Prof. M. K. Ghosh ..	.. Dean, Faculty of Commerce.
Prof. K. K. Bhattacharya	.. Dean, Faculty of Law.

22-1-49 Visited the following institutions—
Arts, Commerce and Law Departments and Library.

Interviewed—

Prof. S. C. Deb ..	Head of the English Department.
Dr. P. E. Dustoor ..	Associate Professor of English.
Shri K. K. Mehrotra ..	Reader in English.
Dr. R. P. Tripathi .	Head of the History Department.
Dr. Ishwari Prasad ..	Head of the Politics Department.
Prof. S. K. Rudra ..	Head of the Economics Department.
Dr. Dhirendra Varma ..	Head of the Hindi Department.
Capt. S. M. Zamin Ali	Head of the Urdu Department.

23-1-49 Interviewed—

Prof. A. C. Banerji ..	Chairman, A. U. Teachers' Association and Head of the Maths. Department.

Dr. Gorakh Prasad	..	Reader in Mathematics.
Dr. P. L. Srivastava	..	Reader in Mathematics.
Dr. B. N. Prasad	..	Reader in Mathematics.
Dr. N. R. Dhar	..	Head of the Chemistry Deptt.
Prof. Salig Ram Bhargava	..	Head of the Physics Deptt.
Dr. H. R. Mehra	..	Head of the Zoology Deptt.
Dr. B. R. Saksena	..	Reader in Sanskrit.
Dr. R. N. Ghosh	..	Reader in Physics.
Capt. J. C. Pande	..	Reader in Military Science.
Dr. Satya Prakash	..	Secretary, A.U. Teachers' Association.
Shri R. K Kaul	..	Philosophy Dept.
Dr. H. N. Stuart	..	Canon, Holland University College.
Dr. Mosher ..	..	Allahabad Agricultural Institute.
Shri R. K. Sur	..	Teachers' Training College.
Shri B. N. Kar	..	Anglo Bengali Intermediate College.
Shri Ali Ameer	..	Government Intermediate College.

LUCKNOW—*24th January, 1949.*

25-1-49 Visited the following institutions—

Science Laboratories, and

Institute of Palaeo-Botany.

Interviewed—

Shri Acharya Narendra Deva, Vice-Chancellor.

Shri C. B. Gupta, Treasurer.

Shri K. D. Tewari, Registrar.

Deans.

Dr. Birbal Sahni, Faculty of Science.

Prof. B. N. Chatterjee, Faculty of Commerce.

Dr. R. U. Singh, Faculty of Law.

26-1-49 Visited the following institutions—

Medical College and Hospital.

Discussion with Members of the Executive Committee of the University Union.

Interviewed—

Professor Radhakamal Mukerji, Faculty of Arts (Dean).

Dr. S. N. Mathur, Faculty of Medicine (Dean).

Miss S. Chakko, Principal, Isabella Thoburn College.

Dr. Hanson, Principal, Lucknow Christian College.
Shri Misra, Principal, Kanya Kubja College.

27 & 28-1-49 Attended Lucknow University Jubilee Celebrations.

29-1-49 Visited the following institutions—

Isabella Thoburn College.
Law Faculty.
University Library.

Interviewed—

Raja Bisheshwar Dayal Seth, Ex-Vice-Chancellor.
Principal, Mahila Vidyalaya College.
Principal, Karamat Husain Girls' College.

Heads of Departments in the Faculty of Medicine.

Dr. B. B. Bhatia.
Dr. K. N. Mittra.
Dr. S. N. Mitter.
Dr. S. P. Gupta.
Dr. R. S. Shukla.
Dr. C. S. Chatterjee.
Dr. Dharam Narain.
Dr. R. K. Yajnik.
Dr. S. S. Misra.

ALIGARH—*30th January, 1949.*

31-1-49 Visited the following departments—

Commerce Department.
History Department
Strachey Hall.
Library.
Philosophy Department.
Economics Department.
Urdu Department.
Persian Department.
Mathematics Department.
Geography Department.
English Department.
Arabic Department.
Sanskrit Department.

Interviewed—

Prof. Mohd. Habib.
Dr. Hadi Hasan.
Prof. Habibur Rahman.
Shri A. M. Khwaja.
Shri Bashir-ud-Din.
Prof. Shafi.

Dr. Tahir Rizvi.
Shri Ghulam Sarwar.
Dr. Rafiq Husain.
Dr. Hafiz-ur-Rehman.
Dr. Rashid.
Dr. Aziz (S. S. Hall).
Shri R. W. Zaidi (V. M. Hall).
Shri Inayat Ali Khan (Aftab Hall).
Principal Jhingran (D. S. College), and
Principal Garg (Varasheni College).

11-2-49 Visited the following institutions and departments—

Engineering College.
Training College.
Physics Department.
Chemistry Department.
Zoology Department.
Botany Department.

Interviewed—

Deans of the Faculties of Science and Engineering and the Chairmen of the Science Departments.
Prof. M. Haider (Chemistry).
Dr. M. B. Mirza (Zoology).
Dr. A. A. Haider (Botany).
Dr. N. M. Basu (Mathematics).
Dr. S. M. Ali (Geography).
Dr. Nawazish Ali (Physics).

12-2-49 Visited the following—

Medical Stores.
University Hospital.
Tibbiya College.
Women's College and Playing fields.

Interviewed—

Shiekh Abdullah
Shri Islam Nabi Khan, and
The Principal, Women's College.

CALCUTTA—*10th February, 1949.*

11-2-49 Visited—
- Gokhale Memorial College.
- Women's Christian College.
- Lady Brabourne College.
- Hastings House.
- National Library, Belvedere.

12-2-49 Visited—
- Surendra Nath College.
- City College.
- Vidyasagar College.
- Victoria Memorial.

13-2-49 Visited—
- Ramakrishna Mission, Belur, and Barrackpur Government House

14-2-49
- Sanskrit College.
- Central Calcutta College.
- St. Xaviers College.
- Government School of Art.
- Indian Museum.

GAUHATI—*15th February, 1949.*

15-2-49 Interviewed—
- Shri Gopinath Bardaloi, Premier and Education Minister, Assam.
- Dr. K. Handiqui, Vice-Chancellor.
- Shri R. R. Thomas.
- Dr. S. K. Bhuyan.
- Principal S. K. Datta.
- Dr. B. K. Barua.
- Dr. B. K. Kakaty.
- Shri S. N. Chakravarty.
- Shri Uma Kanta Goswami.
- Dr. H. K. Baruah.
- Mrs. Rajabala Das.
- Prof. V. D. Thawani.
- Prof. D. C. Sabharwal.

Visited—
- The National Cadet Corps.

16-2-49 Visited the following—
- Cotton College.
- R. H. Girls' College and Assam Museum.
- University Classes.
- The Temporary University Colony at Chandmari.
- The Department of Historical and Antiquarian Studies (Government of Assam).

17-2-49. Interviewed—

Representatives of the Bengali-speaking residents.
Representatives of the University teachers.

PATNA—*18th February, 1949*

18-2-49 Interviewed—

Shri Sri Krishna Sinha, the Premier.

Shri C. P. N. Singh, Vice-Chancellor.

19-2-49 Visited the following University Departments & Colleges—

University Institute of Psychological Research and Service
Science College, Patna.
Department of Politics.
Department of Labour and Social Welfare.
Department of Statistics.
Department of Geology.
Patna College.
University Institute of Music.

Interviewed—

Dr. S. C. Sarkar
Dr. R. C. Ray.
Dr. P. B. Ganguly.
Dr. S. P. Prasad.
Mother Theodosia.
Shri K. P. Sinha.
Shri B. K. Sinha.
Shri Bhagwat Prasad.
Dr. J. S. Patel.
Shri S. K. Sen.
Dr. S. Sen.

20-2-49 Interviewed—

The Hon'ble the Premier of Bihar and other members of the Cabinet.
The Members of the Syndicate, University of Patna.

BANARAS—*21st February, 1949.*

21-2-49 Visited—

Banaras Hindu University Campus.
Central Hindu School.
Central Hindu Girls' school.

Interviewed—

Vice-Chancellor.
Pro-Vice-Chancellor.
Principal U. C. Nag, Central Hindu College.
Principal S. S. Joshi, Science College.
Principal D. Swarup, College of Mining & Metallurgy.
Principal J. C. Luthra, College of Agriculture.
Principal P. S. Varma, College of Technology.
Principal B. A. Pathak, College of Ayurveda.

Principal G. B. Joshi, Law College.
Principal Kali Prasad Misra, Sanskrit Mahavidyalaya.
Principal H. B. Malkani, Teachers' Training College.
Principal Mrs. K. Venkateshwaram, Women's College.
Dr. P.L. Vaidya, Head of the Department of Sanskrit.
Prof. V. V. Narlikar, Head of the Department of Mathematics.
Prof. B. L. Atreya, Head of the Department of Philosophy.
Prof. Mukat Behari Lal, Head of the Department of Politics.
Shri A. K. Das Gupta, Head of the Department of Economics and Commerce.
Pt. Keshva Prasad Misra, Head of the Department of Hindi.
Shri Mahesh Prasad Misra.
Prof. R. S. Tripathi.
Prof. Pran Nath.
Prof. A. S. Altekar.

22-2-49 Visited—

College of Mining & Metallurgy.
Department of Chemistry.
Department of Geology.
Department of Geography.
Department of Botany.
Department of Zoology.
Department of Spectroscopy.
Department of Physics.
Banaras Hindu University Central Office.
National Cadet Corps Parade.

Interviewed—

Principal G. B. Joshi.
Principal S. S. Joshi.
Prof. A. B. Misra.
Dr. M. S. Verma.
Pandit G. P. Mehta.
Prof. Rajnath.
Principal P. S. Varma.
Prof. V. V. Narlikar.
Principal Kali Prasad Misra.
Pandit Ramvyas Jyotishi.
Prof. A. S. Altekar.
Principal Daya Swarup
Principal U. C. Nag.
Prof. R. S. Tripathi.
Prof. M. B. Lal.
Principal H. B. Malkani.

Principal M. Sengupta.
Prof. G. C. Mukerjee.
Pandit Govind Malaviya, Vice Chancellor.
Dr. B. Darsannacharya.
Dr. K. R. Mehta.
Dr. H. L. Chibber.
Dr. R. K. Asundi.
Prof. U. A. Asrani.
Prof. Menon.
Dr. Srivastava.

23-2-49 Visited—
Teachers' Training College.
Ayurvedic College, Hospital & Dissection.
University Hostels.
Sanskrit Mahavidyalaya.
Central Hindu College.
Women's College & Hostel.
International Students' Society.
Gymnasium—Shivaji Hall.

Interviewed—
Prof. G. C. Mukerji, Dean of Faculty of Technology.
Prof. P. S. Varma, Head of the Department of Industrial Chemistry.
Shri H. N. Roy, Head of the Department of Ceramics.
Shri R. Charan, Head of the Department of Glass Technology.
Shri N. K. Basu, Head of the Department of Pharmaceutical Chem.
Principal J. C. Luthra, Head of the Department of Agriculture.
Dr. D. Swarup, Head of the Department of Metallurgy.
Prof. M. P. Netarwala, Head of the Department of Mining.
Prof. M. Sengupta, Head of the Department of Electrical Engineering.
Capt. B. Chatterji, Superintendent, Workshops.
Prof. B. L. Atreya.
Dr. Akshaibar Lal.
Pt. Kamlapati Tripathi.
Prof. G. B. Pant.
The representatives of the University Union.

24-2-49 Visited the following institutions—
Law College.
College of Engineering.
Department of Pharmaceutics.
Department of Glass Technology.
Department of Ceramics.
Department of Industrial Chemistry
College of Agriculture.

Interviewed—
Pt. Govind Malaviya, Vice-Chancellor.
Dr. P. Parija, Pro-Vice-Chancellor.
Dr. I. N. Gurtu, Rajghat, Banaras (Ex-Pro-Vice-Chancellor).

AGRA—*25th February, 1949.*

26-2-49 Visited—
Medical College.

Interviewed—
Dr. N. P. Asthana, Vice-Chancellor.
Executive Council members.
Principals of Colleges at Gwalior and Indore.

27-2-49 Interviewed—
Principal K. C. Mehta, Agra College.
Principal C. Mahajan, St. John's College.
Principal B. P. Mathur, Dayalbagh College.
Principal Mrs. Sukhia, Girls' College, Dayalbagh.
Principal Bhatt, Medical College.
Principal R. K. Singh, Balwant Rajput College.
Senior Professors of Balwant Rajput College, Agra.

Visited—
Dayalbagh Colleges.
Balwant Rajput College, Agra.

28-2-49 Interviewed—
Principal & Professors of St. John's College.
Principal & Professors of Medical College.
Principal & Professors of Agra College.

Visited—
St. John's College.
Agra College.

JAIPUR—*1st March, 1949.*

2-3-49 Visited—
Site of the University where the Foundation Stone was laid by His Excellency the Governor General on 20th February.

Interviewed—
Dr. Mahajani (Vice-Chancellor).
Principal K. L. Varma, Dean of the Faculty of Science.
Professor Shukla, Dean of the Faculty of Arts.
Dr. Mehta, Medical College.
Shri K. S. Hajela, Dean of the Faculty of Law.
Students, President and Secretary.
Maharaja's College Union and two other representatives.
Sir V. T. Krishnamachari.

3-3-49 Visited—

Medical College.
Maharaja's College.
Maharani's College for Girls.

Interviewed—

Dr. Kasliwal.
Dr. Chaudhri.
Dr. B. M. Lal.
Professors of Maharaja's College.
Principal & other Professors of Maharani's Girls' College.
Dr. K. M. Gupta.
Dr. Y. Bhardwaj.
Dr. K. N. Kini.
Principal L. S. Gautam.
Pt. D. P. Tewari, Education Minister.
Shri D. R. Bhandari, Development Minister.

AHMEDABAD—*5th March, 1949.*

5 3-49 Visited the following institutions—

Gujarat College, Ahmedabad.
S. L. D. Arts College, Ahmedabad & M. G.
Institute of Science, Ahmedabad.
H. L. College of Commerce, Ahmedabad.
College of Engineering, Ahmedabad.
B. J. Medical College, Ahmedabad.
Physical Research Laboratory, Ahmedabad.

Interviewed—

The Hon'ble Shri G. V. Mavlankar.
Sir M. V. Divatia.
Shri Kasturbhai Lalbhai.
Seth Amritlal Hargovindas.
Shri B. K. Mazumdar.
Principal Tolani.

6-3-49 Interviewed—

Principal Thakore.
Seth Shantilal Mangaldas.
Dr. Ramanathan.
Principal K. G. Naik.
Principal S. V. Desai.
Principal Patel (Pharmacy).

(As the Chairman could not be with the Commission on 5-3-49 and 6-3-49, he visited Ahmedabad institutions on 22-4-49).

BOMBAY—*6th March, 1949.*

7-3-49 Visited—

Royal Institute of Science.
Elphinstone College.
Secondary Training College.
Government Law College.

Interviewed—

Principals of Arts and Science Colleges.

Principal T. M. Advani.
Principal Nayar Ahmad.
Rev. A. M. Coyne.
Principal B. B. Deshpande.
Rev. J. Kellock.
Dr. S. K. Muranjan.
Dr. V. S. Patankar.
Dr. D. S. Sodhi.
Principal L. N. Welinkar.
Principal K. R. Gunjikar.

Principals of Professional Colleges.

Shri S. R. Chadha.
Shri S. G. Chitale.
Shri P. N. Joshi.
Shri R. P. Koppikar.
Miss A. B. H. Rustomjee.
Shri D. P. Sethna.
Shri D. D. Variava.

8-3-49 Visited—

St. Xavier's College.
Sydenham College.
University School of Economics and Sociology.

Interviewed—

The Hon'ble the Premier and other members of the Cabinet.
Dr. H. J. Bhabha.

College Professors.

Prof. R. Choksi.
Rev. J. Duhr.
Prof. G. M. Kurulkar.
Prof. K. T. Merchant.
Dr. N. N. Murti.
Dr. H. J. Taylor.
Prof. H. D. Velankar.

Heads of Secondary Schools.

Shri C. H. Christie.
Shri A. K. Dawood.
Shri Raman N. Vakil.
Shri M. T. Vyas.

9-3-49 Visited—

Ramanarain Ruia College.
R. A. Podar Commerce College.
V. J. T. Institute.
University Department of Chemistry Technology.

Interviewed—

Mahamahopadhyaya Dr. P. V. Kane, Vice-Chancellor.
Professor C. N. Vakil.
Professor G. S. Ghurye.
Professor K. Venkataraman.
Shri K. M. Khadye
Dewan Bahadur K. M. Jhaveri.

10-3-49 Visited—

Haffkine Institute.
G. S. Medical College.

Interviewed—

Shri Kasturbhai Lalbhai.
Shri Manilal Nanavatty.
Shri Rustom Masani.
Dr. B. G. Vad.
Principal V. K. Joag.
Dr. V. L. Parmar.
Dr. C. S. Patel.
Dr. B. B. Yodh.

11-3-49 Visited—

Grant Medical College.
Sophia College for Women.
Wilson College.

Interviewed—

Principal N. M. Shah.
Shri D. C. Pavate.
Prof. P. A. Wadia.
Shri K. G. Sayaidain.

12-3-49 Visited—

University Library.

Interviewed—

Shri Vithal N. Chandavarkar.
Shri M. N. Natu.
Dr. K. A. Hamid.
Dr. J. M. Mehta.
Shri S. R. Dongerkery.
Swami Kuvalayananda.
Shri P. M. Lad.

CUTTACK—*14th March, 1949.*

14-3-49 Interviewed—

Hon'ble Sri H. K. Mahtab, Premier, Orissa.
Hon'ble Pandit L. Misra, Minister of Education, Orissa.
Hon'ble Sri N. Kanungo, Minister, Orissa.
Shri L. K. Das Gupta, Advocate.
Shri A. V. Subba Rau, Advocate, Berhampore.

15-3-49 Visited—

Stewart Science College.
Ravenshaw College.

Interviewed—

Dr. B. Prasad.
Prof. P. S. Sundaram.
Prof. B. C. Das.
Pandit K. K. Kar.
Dr. K. B. Saha.
Sri Kunja Bihari Tripathy.
Rai Bahadur B. V. Roy.
Miss S. B. Das.
Dr. G. B. Banerjee.
Dr. Mahanadi Mohanty.
Shri G. S. Das.
Shri P. V. L. Narasinga Rao.
Shrimati Sarala Devi.
Shri Kahnu Charan Misra.
Shri Vanchanidhi Samant Rao.
Shri Kali Charan Patnaik.
Shri G. Singh, Principal.
Shri D. S. Patnaik.

16-3-49 Visited—

Training College.
Orissa Medical College.
Kalinga Gymnasium Institute.

Interviewed—

Lt. Col. P. Papatla.
Dr. Kasinath Misra.
Dr. G. C. Pattanayak.
Dr. George Patnaik.
Shri P. S. Kurian.
Shri Gouri Kumar Brahma.
Shri Sreedhar Das.
Shri Ram Narain Mohanty.
Shri Satyavadi Misra.
Pandit Sri Ananta Tripathy.
Shri N. P. Das.

17-3-49 Interviewed—

Shri C. M. Acharyya, Vice-Chancellor.
Shri P. Vankataratnam, Headmaster, Kandapara, Senate Member.

WALTAIR—*18th March, 1949.*

18-3-49 Visited the following institutions—

Mrs. A. V. N. College.
Andhra Medical College.
University Guest Quarters.

Interviewed—

Syndicate Members

Shri S. B. P. Pattabhirama Rao.
Shri S. Parthasaradhi Naidu.
Dr. A. L. Narayan.
Shri M. V. Krishna Rao.
Shri P. Ramaswamy.
Shri K. V. Gopalswamy.

19-3-49 Visited—

University Colleges and Library.

20-3-49 Visited—

University Campus—" Visranthi Sala ".

Interviewed—

Prof. V. S. Krishna, Ag. Vice-Chancellor.
Shri K. V. Gopalswamy, Registrar.
Prof. T. R. Seshadri.
Prof. K. Rangadhama Rao.
Prof. R. Gopala Iyer.
Rao Bahadur Prof. G. N. Rangaswami Ayyangar.
Professor C. Mahadevan.
Prof. Sailewar Sen.
Prof. K. R. Srinivasa Iyyengar.
Shri S. T. Krishnamachari.
Lt. Col. M. V. Ramanamurti.
Shri. D. Narayan Rao.
Dr. P. N. Rangaiah.
Shri S. Rajagopalan.
Shri V. Iswariah.
Dr. T. K. Raman.
Shri T. V. Mathew.
Shri M. K. Jacob.
Shri N. V. Subrahmanyam.
Dr. G. S. Viswanathan.
Shri P. Narasimha Rao.
Shri C. Bhadraiah.
Shri V. Anna Rao.
Dr. N. G. Pandalai.
Dr. P. Seetharama Raju.
Dr. P. Ramakrishna Mudaliar.
Shri G. Gowranga Rao.
Shri A. Bhavanarayana Rao.
Shri D. S. Subrahamanyam.
Shri P. L. N. Sarma.
Dr. R. Rama Rao.
Prof. N. K. Sur.
Principal, Andhra Medical College.

ANNAMALAINAGAR—*22nd March, 1949.*

23-3-49 Visited—

University Campus.
Arts College.
Science College.
Oriental College.
Sports Pavilion.
Library Men's Hostel.
Gokhale Hall.
Hospital.
Women's Hospital.
Music College.
Engineering and Technology buildings—
1. Workshop.
2. Engineering and Technological Colleges.
3. Travancore Hostel.

Interviewed—

Representatives of the Teachers' Association.

24-3-49 Interviewed—

Vice-Chancellor.

Deans and other teachers of the Arts, Science and Oriental Faculties, Wardens of Hostels and Director of Physical, Education.

Arts—
1. Shri R. Satyanatha Ayyar.
2. Shri R. Ramanujachariar.
3. Shri M. K. Muniswami.

Science—
1. Shri G. V. Krishnaswami Ayyangar.
2. Shri T. P. Navanitakrishna.
3. Shri R. V. Seshiah.
4. Shri T. Saktivelu.
5. Shri T. C. N. Singh.
6. Shri T. Govindarajan.

Oriental—
1. Dr. A. Chidambaranatha Chettiar.
2. Dr. C. S. Venkateswaran.

Wardens of Hostels and Director of Physical Education—
1. Shri A. C. Subramanyan—Warden, Men Students' Hostel.
2. Srimathi Bhagirathi Ammal—Warden, Ladies' Hostel.
3. Shri L. K. Govindarajulu—Director of Physical Education.

Members of the Syndicate who are not Teachers of the University—
1. Shri C. S. Srinivasachariar.
2. Shri V. P. Narayanan Nambiar.
3. Shri N. Viswanatha Ayyar.

Dean and others of the Engineering and Technology Faculty—

1. Dr. K. C. Chakko.
2. Dr. N. C. Saha.
3. Prof. C. A. Subramanyan.
4. Dr. M. Y. Pai.

MADRAS—*25th March, 1949.*

26-3-49 Visited—

Stanley Medical College.
Teachers' Training College, Saidapet.

Interviewed—

Principal and staff of the Stanley Medical College.
Principal and staff of the Teachers' Training College, Saidapet.

28-3-49 Visited—

Madras Medical College.

TRIVANDRUM—*29th March, 1949.*

29-3-49 Interviewed—

The Vice-Chancellor. (Mr. H. Papworth).

Syndicate—

Shri A. Gopala Menon.
Dr. Jivanayakam.
Dr. T. K. Koshy.
Shri C. P. Mathew.
Shri Maloor K. Govinda Pillay.
Rev. Father Thos. William.
Shri V. Narayana Pillay.

University Teachers—

Shri P. S. Atchuthan Pillai.
Dr. C. S. Venkateswaran.
Dr. K. Bhaskaran Nair.

30-3-49 Visited the following institutions—

Central Research Institute.
Public Health Laboratory.
University College.
Law College.

Interviewed—

Representatives of legal profession—

Shri K. Narayanan.
Shri V. N. Subramania Aiyar.
Shri P. S. Atchuthan Pillai.
Shri K. C. Abraham.
Shri Malloor K. Govinda Pillai.

Deans of Faculties—

Shri V. Narayana Pillai (Arts).
Dr. Jivanayakam (Education).
Dr. C. C. John (Science).
Shri P. S. Krishna Pillay (Law).
Shri M. V. Keshava Rao (Technology).

Principals of Colleges—

Shri V. Sundararaj Naidu.
Miss Anna Nidiri.
Shri K. Narayanan.
Shri S. Ramachandra.
Shri P. S. Abraham.
Shri M. P. Gopalan Nair.
Shri N. Gopala Pillai.
Shri A. J. Cherian.
Shri P. C. Joseph.
Rev. Fr. Thomas William.
Shri C. P. Mathew.
Shri A. Gopala Menon.
Shri P. G. Sahasranama Aiyar.
Shri T. K. Narayana Iyer.
Shri G. Gopalakrishna Iyer.
Shri A. Chumar.

31-3-49 Visited the following institutions—

Teachers' Training College.
Women's College.
Institute of Textile Technology.

Interviewed—

Shri P. S. Abraham.
Shri Kainikhara K. Pillai.
Shri Muthukrishna Karayalam.
Shri Parameswaran Pillai.
Shri Zacharia.
Staff of Women's College.
Rev. Mar Ivanios.
Shri K. P. Padamanabha Pillai.
Shri T. S. Seshadri.
The Vice-Chancellor.

BANGALORE—*1st April, 1949.*

1-4-49 Visited—

Shree Jayachamarajendra Occupational Institute.

Interviewed—

The Principal and staff of the Occupational Institute.

2-4-49 Visited—

The Central College.
The College of Engineering.
The Intermediate College.
The Maharani's College.
Shri Krishnarajendra Silver Jubilee Technological Institute.

Interviewed—

Rajadharmaprasakta Shri T. Singaravelu Mudaliar.
Shri P. Shivashankar, Professor Law College.
Shri M. Narayana Rao, Principal, Law College.
Rao Bahadur B. Venkateshachar.
Sm. M. R. Lakshamma.
Sm. K. Kamaladevi.
Rajadharmapravina Diwan Bahadur P. Mahadevayya.
Shri P. H. Rama Reddy, Principal.
Shri S. R. Mandre.

3-4-49 Visited—

The Indian Institute of Science.
(Further visits and interviews on 6th April.)

MYSORE—*3rd April, 1949.*

3-4-49 Interviewed—

Rajasevasakta Shri V. Subramanya Iyer.
Shri T. S. Rajagopala Iyengar.
Sm. T. Sunandamma.
Shri S. Rangaramiah.
Shri N. Srinivasa Murthi.
Rev. Father C. A. Browne.
Shri A. Venkateshiah.
Shri K. V. Raghavachar.

4-4-49 Visited—

The Maharaja's College.
The First Grade College and
The University Library.

Interviewed—

The Principal & Heads of Departments at the Maharaja's College.
Shri A. G. Ramachandra Rao, Hassan.
Shri O. Veerabasavappa, Davanagere.

Shri A. Bhimappa Naik.
Shri M. Govinda Reddy.
Shri Nerale Madiah.
Shri S. M. Siddiah.
Shri M. L. Nanjara Urs.
Shri Mulka Govinda Reddy.
Dr. Khizar Ali Khan.
Shri T. Madiah Gowda.

5-4-49 Visited—

The Medical College.
The St. Philomena's College.

Interviewed—

Members of the University Council.

BANGALORE—*6th April, 1949.*

6-4-49 Visited—

The Indian Institute of Science.

Interviewed—

Shri T. Siddalingiah, President, Mysore State Congress.
Shri T. Subramanyam, President, Constituent Assembly.
Sastravaidyapravina Dr. T. Seshachalam.
Rukun-Ul-Mulk Janab S. Abdul Wajid, B.A.
Shri D. V. Gundappa.
Justice Shri N. Balakrishniah.
Mrs. Rathnamma Madhava Rao.
Shri K. R. Madhava Rao.
Sister Antionette, Principal, Mount Carmel College.
Shri K. Subbiah Setty.
Shri B. M. Sreenivasiah.
Shri S. M. Munivenkatappa.
Shri H. R. Guruvareddy.
Shri H. B. Gundappa Gowda.
Shri M. P. L. Sastri.

SAUGOR—*11th April, 1949.*

11-4-49 Interviewed—

Shri Anand Mangal Misra, Treasurer.
Professor Ishwar Chandra, Registrar.
Pt. Nand Dulare Bajpaye, Dean, Faculty of Arts.

Heads of the Departments—

Dr. A. K. Bhattacharya.
Dr. D. R. Bhawalkar.
Dr. R. D. Misra.
Dr. G. W. Chiplonkar.
Pt. N. D. Bajpeyi.

Shri D. S. Shrivastava.
Shri S. R. Swaminathan.
Dr. H. S. Gaur, Vice-Chancellor.

12-4-49 *Executive Council.*—

Dr. H. S. Gaur.
Shri Gopilal Shrivastava.
Shri Anand Mangal Misra.
Shri B. L. Seth.
Shri S. C. Mukherji.
Dr. A. K. Bhattacharya.
Dr. K. G. Rama Rao.
Pt. N. D. Bajpeyi.
Dr. N. G. Shabde.
Shri A. L. Pandey.
Shri D. S. Shrivastava.
Pt. Raj Nath Pandey.
Professor Ishwar Chandra, Registrar.
Dr. S. C. Singh, Lecturer, Political Science Deptt. and some Assistant Lecturers.
Dr. V. S. Jha, Education Secretary, C. P.

DELHI—*13th April, 1949.*

13-4-49 Visited—

Jamia Millia Islamia.

14-4-49 Interviewed—

Prof. K. T. Shah.
Shri K. Zachariah.
Dr. H. S. Pruthi.

15-4-49 Interviewed—

The Hon'ble Minister for Health, Shrimati Raj Kumari Amrit Kaur.
Prof. Humayun Kabir.
Prof. G. D. Sondhi.
Shri S. Varadachari.
Dr. Appadorai.
Shri Shri Ram.

16-4-49 Interviewed—

The Hon'ble Mr. Justice Mehr Chand Mahajan.

SIMLA—*28th April, 1949.*

28-4-49 Interviewed—

The Vice-Chancellor, East Punjab University. (Shri G. C. Chatterjee).

30-4-49 Interviewed—

Members of the East Punjab University Syndicate—

1. Shri G. C. Chatterji, Vice-Chancellor.
2. Dr. K. C. Khanna.
3. S. B. Bhai Jodh Singh.
4. Dr. G. L. Datta.
5. Prof. D. C. Sharma.
6. The Hon'ble Mr. Justice Teja Singh.
7. Dewan Anand Kumar.
8. Col. B. S. Nat.
9. Prof. Mahan Singh.
10. Principal A. R. Khanna.
11. The Hon'ble Mr. Justice Harnam Singh.
12. The Hon'ble Mr. Justice A. N. Bhandari.

Prof. D. N. Bhalla, Registrar.

BARODA—*15th July, 1949.*

15-7-49 Visited the following—

Baroda College & Science Institute.
Pratapsinha College of Commerce and Economics.
Medical College and Engineering College.
Museum & Picture Gallery.
Central Library.
Oriental Institute.

Interviewed—

Dr. Jivraj N. Mehta.
Shri Chunibhai P. Shah.
,, Venilal N. Modi.
,, V. A. Nikte.
,, Ramanlal V. Desai.
,, Kumari Sushila Pandit.
,, S. S. Raichur.
Janab Rasulkhan Pathan.
Nawab Fakruddin.
Shri Chandrashanker Shukla.
,, M. M. Doctor.
,, S. Sabnis.
,, B. B. Joshi.
,, C. J. Shah.
Reverend Father Palomera.
Mrs. S. S. Pagar.

16-7-49 Interviewed—

Members of the Syndicate—

Mrs. Hansaben Mehta, Vice-Chancellor.
Shri A. R. Wadia, Pro-Vice-Chancellor.
Dr. Jivraj N. Mehta.
Shri C. J. Sutaria.
Shri G. M. Tambe.
Shri M. M. Zala

Shri S. B. Junarkar.
Dr. M. A. Buch.
,, M. D. Patel.
,, T. K. N. Menon.
Dr. C. S. Patel.

POONA—*17th July, 1949.*

17-7-49 Interviewed—
The Vice-Chancellor,—Shri M. R. Jayakar.

18-7-49 Visited the following—
Nowrojee Wadia College.
Sir Parashurambhau College.
Tilak College of Education.
Maharashtra Education Society's Colleges of Arts and Science.
Fergusson College.
Brihan Maharashtra College of Commerce.

Interviewed—
Principal V. K. Joag—Wadia College.
Principal S. V. Dandekar—S. P. College.
Dr. M. B. Neogi—M. E. S. College.
Dr. D. D. Karve.—Fergusson College.
Shri Raghunath Paranjpye.
Prof. R. P. Patwardhan.
Mahamahopadhyaya D. V. Potdar.
Dr. N. N. Uppal.
Principal Kale.
Principal Dr. B. B. Dikshit—Medical College.
Principal S. V. Kogekar—B. M. College of Commerce.
Principal B. V. Bapat—Tilak College of Education.
Principal B. B. Sarkar—Engineering College.
Principal L. S. S. Kumar—Agricultural College.
Dr. S. K. Belvalkar.
Dr. S. M. Katre.
Prof. N. V. Joshi.
Prof. S. V. C. Aiyar.
Shri R. B. Ghorpade.
Principal K. G. Pandit

19-7-49 Visited the following—
Deccan College Postgraduate and Research Institute.
B. J. Medical College.
College of Engineering.
College of Agriculture.
The Gokhale Institute of Politics and Economics.
Servants of India Society.
Bhandarkar Oriental Research Institute.
Law College.
Maharashtra Association for the Cultivation of Science.
S. N. D. T. Indian Women's University.
Bharat Itihas Samshodhak Mandal.
Lord Reay Industrial Museum.

NAME OF THE UNIVERSITY.	Professor.	Asstt. Professor.	Reader.
1 AGRA UNIVERSITY	..	..	..
2. ALIGARH MUSLIM UNIVERSITY.	1,500 (fixed) 800—40—1,000. Selection—50—1,250. * 500—25—800.	..	500—25—800 Part-time Rs. 100 (Allowance).
3. ALLAHABAD UNIVERSITY.			
(a) Previous Scale ..	600—30—900—50—1,000.	..	350—15—380—20—500—25—600. 450—40—800.
(b) Present Scale ..	800—50—1,250 ..	..	500—25—800 ..
4. ANDHRA UNIVERSITY	750—50/2—1,000 .. 400—40/2—600—50/3—700.	..	400—40/2—600 200—30/2—320—40/2—400.

Lecturer.	Asstt. Lecturer.	Demonstrator, Tutor etc.	Remarks.
..	..	..	Affiliating University.
Grade I 300—20—500 Grade II 210—15—300. Part-time Rs 200 (fixed). (Law Department Part-time Rs. 50 (allowance) for Military Science & Engineering College.	..	100—10—200 Teachers 100—10—200. 60—5—100. 60—4—100. Rs. 200 (fixed) for German Class (Part-time). Students Assistants and Demonstrators Rs. 100 (fixed.)	* In Readers Grade.
250—25—450 200—10—310—15—400 300—20—480—E.B.—20—500. Part-time Lecturers Scale varies between Rs. 100 & Rs. 200.	..	..	
Grade I 250—10—350 Grade II 210—15/2—300. *125—15/2—200	..	Demonstrator. 125—15/2—200. Rs. 100 (fixed). Tutor (Hindi). Rs. 75 (fixed). Tutor (Commerce). Rs. 100 (fixed). Pand t (Hindi). 90—5/2—125. Pandit (Telugu) 100—5—150. Pandit (Oriya). 90—5/2—125. Pandit (Sanskrit). 100—5—150.	* In Demonstrators Gr de.

NAME OF THE UNIVERSITY.	Professor.	Asstt. Professor.	Reader.
5. ANNAMALAI UNIVERSITY			
(a) Arts, Science and Oriental.	250—15—400—20—500—S.G.—25—700.	..	200—10—300
(b) Engineering and Technology.	400—25—700—E.B.—40—900.	250—15—400—E.B.—20—500.	..
6. BANARAS HINDU UNIVERSITY			
(a) Technology, Engineering and Mining & Met. Colleges.	University Professor. 1,000—50—1,750.	300—20—600 ..	..
	Professors. 600—40—1,000.		
(b) Other Colleges	University Professor. 800—50—1,250.	250—15—400—20—600	..
	Professor. 500—25—800.		
(c) A few in Ayud. College (Ayurveda Adhyapaks)	..	200—10—280—15—400	..
7. BOMBAY UNIVERSITY			
(a) School of Economics and Sociology.	800—50—1,000 ..	..	400—30—700.
(b) Department of Chemical Technology.	800—50—1,000 ..	..	400—30—550—25—700 400—25—700.
8. CALCUTTA UNIVERSITY	800—50—1,000 .. 700—50/2—1,000. 600—50/2—1,000.	..	500—50/2—700 ..
9. DELHI UNIVERSITY			
(a) Old Scale	..	..	450 to 700 .. ..
(b) Present Scale ..	..	..	600 to 800 .. ..
10. EAST PUNJAB UNIVERSITY.	800—50—1,250 ..	..	510—30—750 ..

Lecturer.	Asstt. Lecturer.	Demonstrator, Tutor-etc.	Remarks.
(1) 150—10—250 (2) 100—10—150 (3) Lecturers with titles 75—5—125.	..	Tutors & Demonstrators. 75—5—100.	
180—10—300 ..	..	Workshop Supdt. 250—15—400.	
..	..	Tutors & Demonstrators. 150—10—350.	
..	..	Pradhan Adhyapak. 250—15—400—20—600 Adhyapaks. 150—10—350.	
..	..	Principal Sanskrit Mahavidyala. 500—25—800.	
200—20—400—25—500	..	..	
250—25—400—25—500 200—20—400—25—500	..	Demonstrator. 150—10—250.	
200—25—500 .. 200—20—500.	150—15—300 ..	Demonstrators .. 100—10—200. Tutors. .. Rs. 100 (fixed). Rs. 125 (fixed).	The University proposes to revise these scales as follows:— Professor Rs. 800—50 2—1,000—50—1,250. Readers Rs. 600—50/2—800. Lecturers Rs. 300—20—600. Asstt. Lect. Rs. 150—15—300. Demonstrators Rs. 100—10—250. Tutors Rs. 150—15-300.
250 to 500 .. 250 to 600.	150 to 300 ..	..	
300—25—650 ..	..	Demonstrators .. 200—10—300.	There is slight variation in these scales in some cases.

NAME OF THE UNIVERSITY.	Professor.	Asstt. Professor.	Reader.
11. GAUHATI UNIVERSITY	700—50/2—1,000 ..	..	500—50/2—700 .. * Rs. 550 (fixed).
12. LUCKNOW UNIVERSITY—			
Before 1933	800—50—1,200 ..	..	500—50—800 ..
After „	600—30—900—50—1,000.	..	350—15—380—20—500—25—600.
Present	800—50—1,250 ..	..	500—25—800 ..
13. MADRAS UNIVERSITY	750—50—1,000 ..	..	400—25—600 ..
14. MYSORE UNIVERSITY	Class I 700—30—850	Class I 350—25/2—400.	..
	Class II 400—25—700.	Class II 250—25/2—350.	..
15. NAGPUR UNIVERSITY	800—50—1,000 .. 800—100—1,000.	..	400—50—600 .
16. OSMANIA UNIVERSITY	700—1,200—E.B.—1,500.	..	* 300—400—600—E.B.—800 Ph. Ds. of recognised Indian Universities Rs. 400. Hons. I Class or M.Sc. (by research) certificate holders of recognised European or American Universities Rs. 450. Ph. Ds. of European or American Universities— Rs. 500.
17. PATNA UNIVERSITY .	..	..	..
18. POONA UNIVERSITY	..	..	..
19. RAJPUTANA UNIVERSITY.	..	..	..
20. SAUGOR UNIVERSITY	600—40—1,000 ..	..	400—30—640—40—800
21. TRAVANCORE UNIVERSITY			
Government College ..	Grade I 450—50—750	..	..
	Grade II 350—20—450.		
22. UTKAL UNIVERSITY	..	..	..

Lecturer.	Asstt. Lecturer.	Demonstrator, Tutor, etc.	Remarks.
250—25/2—600 .. *Rs. 200 (fixed).	..	..	* These are the scales of Principal and Lecturers in Law College.
250—25—450 ..	150—10—250 ..	Demonstrators .. 150—10—250.	The previous scale was not uniform.
150—5—200—E.B.—10—300.	..	..	..
300—20—480—20—500 200—20—480—20—500	..	..	..
210—15—300.	..	..	..
Class I 200—10—250 Class II 150—10—200 Class III 100—10—150.	..	..	..
200—20—400 .. 150—10—250.	..	..	..
300—600—E.B.—Q.B. 800.	†225—400 ..	225—400	* Readers and Lecturers have this common scale. Persons possessing higher qualifications (Ph. D. of Indian or foreign University) are given a higher start between Rs. 400 and Rs. 500 according to qualifications and are designated Readers. M. A. or M. Sc. I or II class or holders of equivalent qualifications start at Rs. 300 and designated Lecturers. †M.A. III class or holders of lower qualifications are designated Jr. Lecturers.
..	..	..	Affiliating University.
..	..	..	Affiliating University.
..	..	..	No teaching staff appointed yet.
250—20—450 ..	200—10—300 ..	..	..
275—10—325 .. Grade I 225—10—275 Grade II 175—10—225. Grade III 125—10—175.	.. ..	.. Demonstrators 80—5—100.	.. ..
..	..	..	Affiliating University.

APPENDIX C

COMPARATIVE STATISTICS OF ENROLMENTS IN SOME FOREIGN COUNTRIES.

Table I.—Proportion of Inhabitants to Students in certain Countries (1936).

Country.	Inhabitants in 000's.	Students.	Number of inhabitants per student.
South Africa	2,000*	8,400	238
U. S. A.	1,22,800	990,000† 450,000‡	124† 272‡
Canada	11,000	48,500† 33,000‡	227† 333‡
New Zealand	1,500*	4,500	333
Scotland	4,843	10,250	473
France	41,907	81,000	517
Hungary	8,991	15,600	576
Australia	6,700*	10,300	650
Sweden	6,285	9,100	690
Wales	2,593	3,500	741
Great Britain§	44,795	50,600	885

* White population only.
† All students.
‡ Estimated number of strictly university standard.
§ *i.e.* England, Scotland and Wales.

In 1936-37 the total number of university students in India (including those in the Intermediate classes in all provinces except for three universities in U.P.) was roughly 1,26,000. The total population of India was over 338 millions in 1931 and about 389 millions in 1941, so that in 1936 it was probably about 363 millions. This works out roughly at 1 university student in 2,880.

Table II.—South Africa, Universities and University Colleges : Students classified by Faculties. (Average enrolment for the Calendar Year 1936).

Faculties.	Cape-town.	Pre-toria.	Stell-enbosch	Witwa-tersrand	University of South Africa (five constituent colleges).	Total.
Pure Arts and Science ..	456	556	744	640	1,307	3,703
Education	84	43	245	..	193	565
Medicine and Dentistry ..	613	20	..	570	27	1,230
Commerce	149	208	55	270	156	838
Engineering and Technology ..	261	83	..	608	95	1,047
Law	89	21	27	44	95	276
Fine Arts and Music	304	1	13	..	55	373
Agriculture and Domestic Science	..	91	118	..	23	232
Other Faculties	..	65	4	..	25	94
Total ..	1,956	1,088	1,206	2,132	1,976	8,358

Table III.—Teachers and Students in Australian Universities, 1935.

University.	Established.	Professors.	Lecturers and Demonstrators.	Students attending Lectures.
Sydney	1850	49	188	3,029
Melbourne	1853	36	194	3,071*
Adelaide	1874	19	114	2,072†
Tasmania	1889	9	22	229
Queensland	1909	14	75	1,089
Western Australia	1911	13	44	787
Total ..	..	140	637	10,277

* Exclusive of 217 students at Conservatorium of Music.

† Exclusive of 262 students at Conservatorium of Music.

APPENDIX D

BIBLIOGRAPHY ON GENERAL EDUCATION.

McGrath, Earl, ed. *Science in General Education* (Dubuque, Iowa : Wm. C. Brown Company, 400 pages, 1948). Chapters by twenty-four authors, describing general education programmes as administered in various colleges and universities.

McGrath, Earl, ed. *Social Science in General Education* (Dubuque, Iowa : Wm. C. Brown Company, 260 pages, 1948). A companion volume to the above.

Report of Five-Year Cooperative Study of General Education by about thirty colleges and universities, directed by the American Council on Education. *Cooperation in General Education* (Washington, D. C.: American Council on Education, 240 pages, 1947). An over-all study of general education.

Report of the Harvard Committee. *General Education in a Free Society* (Cambridge, Massachusetts : Harvard University Press, 267 pages, 1945 ; London : Oxford University Press). A much quoted discussion of general education.

The Journal of General Education (Iowa City, Iowa : Department of Publications, State University of Iowa, Quarterly, two dollars per year plus postage). The back issues are valuable. Volume I, number 1, was issued in October 1946. This is the best periodical on the subject.

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APPENDIX E

(TAKEN FROM THE UNIVERSITY RECORD OF THE UNIVERSITY OF FLORIDA, CATALOG 1948-49).

Here is a brief account of the courses of study in Agriculture for the degree of Bachelor of Science. It is a *four* years' course after 12 years' of previous schooling.

During the first year (The Freshman year) students have to take courses in :-

I. *American Institutions*, which is designed to develop and stimulate the ability to interpret the inter-related problems confronting American institutions. The unequal rates of change in economic life, in government, in education, in science, and in religion are analysed and interpreted to how the need for a more effective co-ordination of the factors of the evolving social organisation of today. Careful scrutiny is made of the changing functions of the various institutions as joint interdependent activities so that a consciousness of the significant relationships between the individual and social institutions may be developed, from which consciousness a greater degree of social adjustment may be achieved. (4 hours per week throughout the year).

II. *Biological Science*, dealing with the biological problems and principles associated with the organism's role as (1) a living individual, (2) a member of a race, (3) a product of evolutionary processes, and (4) a member of a socially and economically inter-related complex of living organisms. Under these headings such topics as the structure and functioning of the human body, the structure and functioning of the higher plants, methods of reproduction heredity and variation, the theory of evolution, and ecology are discussed. (3 hours per week throughout the year).

Or General Botany.—A study of the form, structure, growth, reproduction, physiology of plants and their various organs, relation of plants to their environment and to each other ; principles underlying inheritance, variation and organic evolution. (2 hours, and 2 hours laboratory per week throughout the year).

III. *Reading, Speaking and Writing.*—Designed to furnish the training in reading, speaking and writing necessary for the students' work in college and for his life thereafter. This training is provided through practice and counsel in oral reading, in silent reading, in logical thinking, in fundamentals of form and style, in extension of vocabulary and in control of the body and voice in speaking. Students are encouraged to read widely as a means of broadening their interests and increasing their ability to use English. (4 or more hours per week throughout the year).

IV. *Electives in Agriculture or Basic Sciences.*—Selection is usually made from the following courses :—

(1) General Field Crops ; (2) Forage and Cover Crops ; (3) Principles of Animal Husbandry ; (4) Principles of Dairying ; (5) Man and Insects ; (6) Economic Entomology ; (7) Fundamentals in Poultry Production ; (8) Farm Machinery ; (9) Farm Forestry. (3 to 6 hours per week throughout the year).

V. *Military Science.*—Physical Fitness. (1 hour per week throughout the year).

During the second year (Sophomore year) students take the following courses :—

I. *Agricultural Chemistry.*—A basic course embodying selected fundamentals of inorganic, organic, and bio-chemistry, and designed primarily for agricultural students. (3 hours, and 2 hours lecture-demonstration).

II. *Logic and Mathematics.*—The principal aims of the course in Logic are (1) to develop ability to think with greater accuracy and thoroughness and (2) to develop ability to evaluate the thinking of others. The material used applies to actual living and working conditions. The case method is used to ensure practice and numerous exercises are assigned.

The course in Mathematics is a practical course covering the development of the number system, algebra as a generalisation of arithmetic, equations, exponents, logarithms and slide rule, series, investment mathematics, geometrical applications, and the elements of trigonometry. Analyses leading to fundamental understandings and correct manipulation are stressed. (3 hours per week throughout the year).

III. *The Humanities.*—Designed to acquaint the student with literature, philosophy, art and music in which the enduring values of human life have found expression. The course deals with the cultural heritage as well as with the culture of our own day. Its larger purpose is to develop a more mature understanding, an enlarged appreciation, and a philosophy of life adequate for the needs of our age. (4 hours per week throughout the year).

IV. *Electives in Agriculture.*—Selection is usually made from the courses listed above under the first year and the following :—

(1) Drainage and Irrigation ; (2) Agricultural Economics ; (3) Farm Management ; (4) Surveying ; (5) Principles of Horticulture ; (6) Plant Pathology ; (7) Soils ; (8) Soil Fertility. (3 to 6 hours a week throughout the year).

V. *Military Science.*—Physical Fitness (One hour a week throughout the year).

The last two years.—During the next two years spent at the College of Agriculture in the work, as it is called, in the Upper Division (1) the student has to put in 17 hours a week throughout the period, (2) has to show that he has taken at least one course in each of the following :

(*a*) Agricultural Economics ; (*b*) Agricultural Engineering ; (*c*) Agronomy ; (*d*) Entomology ; (*e*) Horticulture ; and (*f*) Soils.

and (3) has to fulfil the requirements of one of the several curricula in Agriculture. The following curricula are offered :—

Agricultural Chemistry
Agricultural Economics
Agricultural Education
Agricultural Engineering
Dairy Industry
Entomology
General Agriculture
Horticulture

Agronomy	Poultry Husbandry
Animal Husbandry	Plant Pathology
Bacteriology	Soil Fertility and Management
Botany	Soil Chemistry and Microbiology
Dairy Husbandry	Soil Surveying

The scope of each of these can be gauged from the details of one of them which we give below :

The curriculum in General Agriculture, for instance, is covered by courses given during 4 semesters as under :—

FIRST YEAR, 1ST SEMESTER : (1) A course in *General Field Crops*, being a study of the grain, fibre, sugar, peanut, tobacco, forage and miscellaneous field crops, with special emphasis on varieties and practices recommended for the region where the college is situated. The history, botanical characteristics, soil and climatic adaptations, fertilizer and culture practices, growing processes, harvesting, uses, economic production and cropping systems are topics discussed. (2 hours and 2 hours laboratory and field demonstration).

(2) A course in *Rural Leadership*, being a study of the functions of the Agricultural Extension Service and other rural organisations; methods of developing agricultural programmes ; training of volunteer local leaders. (3 hours a week).

(3) A course in *Fundamentals in Poultry Production*, dealing with economic importance of the industry, breeds and varieties, principles of production and exhibition judging, location and construction of buildings ; breeding ; hatching ; brooding ; rearing pullets ; managing layers ; feeding ; marketing ; diseases ; one or more field trips to commercial farms. (2 hours and 2 hours laboratory).

(4) A course in *Soils* dealing with the nature and properties of soils with elementary treatment of genesis, morphology and classification. Soil types and problems in Florida. (2 hours and 2 hours demonstration).

(5) Courses in Electives (5 hours a week).

FIRST YEAR, 2ND SEMESTER : (1) A course in *Farm Management*, dealing with the factors of production ; systems of farming, their distribution and adaptation ; problems of labour, machinery, layout of farms, and farm re-organisation. Field trips. (2 hours and 2 hours laboratory a week).

(2) A course in *Farm Motors*, dealing with the general principles of operation of the various sources of farm power. The care, operation and repair of electric motors, internal combustion engines (including automobile, stationary gasoline engines, truck and tractor), and windmills. Laboratory work includes actual operation and repair. (2 hours and 2 hours laboratory a week).

(3) A course in *Forage and Cover Crops*, dealing with plants that produce feed for livestock; methods of establishing and managing grazing areas; production and preservation of hay and silage crops; plants suited for cover crops, conservation programmes and rotation systems of the South. Field trips and plant collection. (2 hours and 2 hours laboratory and demonstration).

(4) A course in *Soil Fertility*, dealing with the general principles of soil fertility; the physical, chemical and biological factors affecting soil fertility and crop production, studies on samples of soil from the home farm; commercial fertilizers, manures, green manures and organic matter maintenance, crop rotations and permanent soil fertility. (2 hours and 2 hours laboratory).

(5) Courses in Electives (5 hours a week).

SECOND YEAR, 1ST SEMESTER : (1) A course in *Farm Sanitation and Disease Prevention*, dealing with practical methods of farm sanitation, and control of principal diseases of farm animals. (2 hours a week).

(2) A course in *Farm Forestry*. (2 hours and 2 hours field and laboratory).

(3) A course in *Plant Pathology*, dealing with (*a*) plant diseases caused by mechanical injury, environmental factors, parasitic bacteria, fungi and other plants and their economic importance, (*b*) life cycles and role of parasitic fungi and bacteria, and (*c*) the economic importance and control of plant diseases. (1 hour and 4 hours laboratory).

(4) Courses in Electives. (9 hours a week).

SECOND YEAR, 2ND SEMESTER : (1) A course in *Marketing*, dealing with principles of marketing agricultural commodities, commodity exchanges, and future trading; auction companies; market finance; market news; marketing of impor tant agricultural commodities. Field trips. (2 hours and 2 hours laboratory).

(2) A course in *Vegetable Gardening*, dealing with the principles and practice of vegetable growing, with special attention to the home garden. (2 hours and 2 hours laboratory).

(3) A course in Principles of *Economic Entomology*, dealing with the fundamental principles of entomology, stressing the economic aspects. This course includes a study of national insect problems with a detailed discussion of the insects of importance on all cultivated plants and domestic animals in the Florida area. (2 hours and 2 hours laboratory).

(4) Courses in Electives (8 hours a week).

The Electives from which students choose during these two years are usually courses in (1) General Field Crops ; (2) Feeds and Feeding ; (3) Agricultural Policy ; (4) Rural Organisation and Programmes ; (5) Agricultural Extension Youth Programme ; (6) Citrus Growing.

The course is designed to give a broad basic training in agriculture. Besides acquainting the student with many fields of agricultural science and practice it seeks to introduce him to agricultural organizations, their functions and programmes. It enables him to become a progressive farmer, or to go into agricultural extension or similar work.

APPENDIX F

The following table shows the number of applicants and the number admitted to the various Training Colleges in India during 1924-48. The numbers on the margins of the table indicate the Colleges on the list appended. The figures represented in the table are in respect of 27 colleges who supplied the information.

TRAINING COLLEGES

1. Teachers' Training College, Ajmer.
2. Women's Training College, Dayalbagh, Agra.
3. Radhaswami Educational Institute, Dayalbagh, Agra.
4. Government Training College, Agra.

4A. Teachers' Training College, Aligarh University, Aligarh.

5. Allahabad Training College, Allahabad.
6. St. Joseph's Training College for Women, Guntur.
7. Government Training College, Rajahmundry.
8. Teachers' Training College, Banaras.
9. Secondary Training College, Dhobi Talao, Bombay.
10. Maharani Tarabai Teachers' Training College, Kolhapur.
11. Secondary Training College, Belgaum.
12. Secondary Teachers' Training College, Baroda.
13. Tilak College of Education, Poona.
14. Maha Lakshmi Training College for Women, Ahmedabad.
15. Premchand Rai Chand Training College for Men, Ahmedabad.
16. David Hare Training College, Calcutta.
17. Union Christian Training College, Berhampore.
18. Central Institute of Education, Delhi.
19. Delhi Teachers' Training Institute, National Muslim University, Jamia Millia Islamia Jamianagar, Okhla, Delhi.
20. Government Training College for Women, Simla.
21. Government Training College for Teachers, Jullundur.
22. Lucknow Training College, Lucknow.
23. Lady Willingdon Training College, Madras.
24. Meston Training College, Royapettah, Madras.
25. Teachers' Training College, Saidapet, Madras.
26. St. Christopher's Training College, Madras.
27. St. Ann's Training College, Mangalore.
28. Government Training College, Trichur.
29. Teachers' College, Mysore.
30. The University Teachers' Training College, Nagpur.
31. Government Diploma Training Institute for Men, Amraoti.
32. Government Diploma Training Institute for Women, Amraoti.
33. Osmania Training College, Hyderabad Deccan.
34. Men's Training College, Hyderabad Deccan.
35. Patna Training College, Patna.
36. Teachers' Training College, Bikaner.
37. Vidya Bhawan Govind Ram Saksaria Teacher's Training College, Udaipur.
38. Diploma Training Institute for Men, Khandwa.
39. Training Institute for Women, Hawabagh, Jubbulpore.
40. Maharaja's Training College, Trivandrum.
41. Government Training College, Cuttack.

TRAINING COL

Table showing number of applicants

Reference No.	Established	Degree or Diploma	1924		1925		1926		1927		1928		1929	
			Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad
1	1941	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
2	1947	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
3	1947	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
4	1948*	L.T.	..	..	..	..	..	..	..	..	..	..	..	..
6	..	B. Ed	..	..	..	..	..	..	..	..	..	..	..	..
7	..	B.Ed	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	1939	..	..	..	..	..	..	..	..	..	..	..	..	..
13	1941	..	..	..	..	..	..	..	..	..	..	..	..	..
16	1908	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
18	1947	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
20	1947	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
21	1947	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
22	..	C.T.	..	..	..	..	..	..	..	..	..	..	..	..
23	..	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
24	1937	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
25	1886	B.T.	240	105	219	103	198	105	195	106	210	106	327	107
26	..	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
27	1943	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
28	1945	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
29	..	B.T.	..	..	66	18	80	47	65	44	43	41	57	32
30	1945	B.T.	..	..	..	..	..	..	..	..	..	..	..	..
31	1946	Dip.T	..	..	..	..	..	..	..	..	..	..	..	..
32	1946	Dip.T	..	..	..	..	..	..	..	..	..	..	..	..
36	1946	C.T.	..	..	..	..	..	..	..	..	..	..	..	..
39	1928	..	..	..	..	..	..	..	..	..	2	2	4	4
41	..	..	..	..	..	..	..	..	21	21	21	21	41	22
Total No. of colleges.			1	1	2	2	2	2	3	3	4	4	4	4
Total No. of candidates.			240	105	285	121	278	152	281	171	276	170	429	165

* The College started awarding this Diploma instead of C. T. in 1948.

LEGES IN INDIA

and those admitted : 1924-1948

Ap : Applicants
Ad : Admitted

1930		1931		1932		1933		1934		1935		1936		
Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
..	..	230	121	489	100	425	100	372	102	338	129	324	104	7
..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
..	..	..	..	..	..	..	..	450	100	360	102	400	101	16
..	..	..	..	..	..	..	..	..	..	..	..	..	..	18
..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
..	..	..	..	..	..	..	..	..	..	..	..	..	..	21
..	..	..	..	..	..	..	..	..	..	..	..	..	..	22
..	..	..	..	..	..	..	..	..	..	..	..	..	..	23
..	..	..	..	..	..	..	..	..	..	..	..	..	..	24
350	112	650	129	782	168	559	176	546	181	519	180	438	200	25
..	..	..	..	..	..	..	..	..	..	..	..	..	..	26
..	..	..	..	..	..	..	..	..	..	..	..	..	..	27
..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
38	37	56	28	78	59	184	84	248	69	136	40	145	41	29
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
4	4	3	3	8	8	10	10	7	7	10	10	11	11	39
30	30	46	34	34	22	54	22	77	22	91	22	76	25	41
4	4	5	5	5	5	5	5	6	6	6	6	6	6	
422	183	985	315	1,391	357	1,232	392	1,700	481	1,454	483	1,394	482	

TRAINING COL

Table showing number of applicants

	1937		1938		1939		1940		1941		1942	
	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad
1 1941 B.T.	..	..	..	..	..	..	..	..	400	66	400	66
2 1947 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
3 1947 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
4 1948* L.T.	..	..	..	..	..	..	..	..	..	..	..	..
6 .. B.Ed.	..	..	..	..	..	..	..	..	..	..	..	..
7 .. B.Ed	298	108	298	111	263	108	317	110	282	108	219	105
8	484	77	576	83	564	83	457	84	415	89	498	90
11 1939 ..	..	..	..	..	160	100	180	103	241	103	146	88
13 1941 ..	..	..	..	..	..	..	..	..	302	115	210	117
16 1908 B.T.	450	101	450	100	400	97	333	62	251	64	suspended	
18 1947 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
20 1947 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
21 1947 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
22 .. C.T.	100	30	120	32	90	35	75	30	125	30	65	26
23 .. B.T.	..	..	..	..	134	60	135	58	159	60	187	60
24 1937 B.T.	250	59	210	61	184	60	198	61	213	60	131	60
25 1886 B.T.	387	198	327	195	336	146	324	149	326	143	200	143
26 .. B.T.	..	..	..	..	..	..	..	..	..	..	..	..
27 1943 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
28 1945 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
29 .. B.T.	97	43	68	40	130	40	94	39	71	49	109	52
30 1945 B.T.	..	..	..	..	..	..	..	..	..	..	..	..
31 1946 Dip.T	..	..	..	..	..	..	..	..	..	..	..	..
32 1946 Dip.T	..	..	..	..	..	..	..	..	..	..	..	..
36 1946 C.T.	..	..	..	..	..	..	..	..	..	..	..	..
39 1928 ..	11	11	10	10	12	12	8	8	10	10	13	13
41	42	24	55	30	62	30	55	26	62	29	60	34
Total No. of colleges.	9	9	9	9	11	11	11	11	13	13	12	12
Total No. of candidates	2,119	651	2,114	662	2,335	771	2,176	730	2,857	926	2,238	854

* The College started awarding this Diploma instead of C T. in 1948.

LEGES IN INDIA

and those admitted : 1924-1948

1943		1944		1945		1946		1947		1948		
Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	Ap	Ad	
350	66	350	66	200	66	150	66	150	80	170	62	1
..	..	..	..	..	..	..	..	22	22	24	22	2
..	..	..	..	..	..	..	..	22	22	30	22	3
..	..	..	..	..	..	..	..	106	52	346	59	4
..	..	..	..	..	..	26	26	38	38	44	44	6
142	89	116	77	136	86	184	110	189	106	256	94	7
395	87	409	90	397	87	327	90	357	121	300	130	8
133	71	83	40	64	40	76	47	118	60	144	91	11
76	73	88	62	95	56	103	79	96	76	107	101	13
for 2 years		171	87	82	58	86	70	122	65	177	128	16
..	..	..	..	..	..	..	..	250	65	266	75	18
..	..	..	..	..	..	..	..	50	35	50	35	20
..	..	..	..	..	..	..	..	125	105	213	104	21
60	24	70	28	60	29	65	30	75	47	80	45	22
167	58	142	60	132	56	123	69	142	81	137	91	23
103	60	82	46	79	51	104	63	127	63	160	60	24
201	129	178	108	180	124	206	133	233	110	269	141	25
126	35	101	37	93	43	82	43	89	47	68	44	26
40	20	41	20	44	20	33	30	46	31	38	29	27
..	..	..	..	76	53	81	63	95	80	142	87	28
93	47	94	47	87	47	78	44	70	48	100	83	29
..	..	..	..	98	85	77	62	91	73	105	69	30
..	..	..	..	..	..	150	64	150	64	150	64	31
..	..	..	..	..	..	75	64	75	64	75	64	32
..	..	..	..	..	..	20	20	30	20	45	20	36
9	9	12	12	6	6	9	9	18	18	18	18	39
50	25	34	19	38	33	24	16	31	24	45	36	41
14	14	15	15	17	17	21	21	27	27	27	27	
1,945	793	1,971	799	1,867	940	2,079	1,207	2,917	1,617	3,559	1,818	

APPENDIX G

PART-TIME WORK AND STUDY IN ENGINEERING EDUCATION.

In the memorandum on Engineering Education submitted to the Commission by D. S. Desai of Calcutta is the statement: "An engineering student's practical training forms such an essential part of his engineering education that it really ought to be planned and supervised as carefully as his course in engineering science at the college. Very few engineering colleges attempt to do their duty to their graduates. Government, universities, institutions of engineers and other engineering societies must take an increased interest in post-graduate training of the engineering graduates. The big engineering firms should be requested to formulate schemes for post-graduate training which will indoctrinate the young graduates in all phases of work usually met in an engineering workshop and office which also will give some insight into real problems."

This statement draws attention to a real need of Engineering and other students, but other methods for meeting these needs have been found to be more productive. After graduation the student is no longer under the control of the university, and the university is no longer in a position to spend money in his interest.

There is another reason why the policy of postponing working experience until after graduation is not desirable. Good thinking requires cases, illustrations and personal experience to think with. If a student must study about engineering, but must wait for two years to see engineering in practice, his studies may seem somewhat unreal and abstract. If he should have frequent opportunity to see engineering work under way he can get a much clearer idea of the significance of what he is learning. If he is himself engaged in some phase of engineering work, then what he is learning may become very real to him.

These conditions can be met by combining work and study in our programme. As actually practised in between fifty and seventy five educational institutions in America, the programme works about as follows :—

The student body is divided into two groups. Thus half the students are at their classes, while the other half are at work in many kinds of projects and institutions within a few hundred miles. The periods of work and study vary in different institutions. In some the students work and study alternately in five week periods ; in others the periods are as long as three months. In some secondary schools which train younger and sub-professional workers the periods are only two weeks long.

In each case a job is held by two students who alternate with each other. While one student is at work the other is at his studies. At the end of a working period they change places. The student who was at work returns to his studies at the university, while the one who was at his studies goes to work. This process keeps up throughout the school year. During vacations each

student works at his job for half the vacation and has the other half free. Thus the job is not interrupted.

At the university the teaching programme is in two divisions. At the beginning of the school year the faculty teaches a group of subjects for one period, say, for eight weeks. Then there is a turn-over of the student body, as the students who have been studying leave for their jobs. A new student body appears, and the same courses are repeated for another period of eight weeks. Then there is another turnover of the student body and the first group returns to the classes. The teachers take up the courses where they left off, and carry them ahead for another period. Then the process is repeated again, and so on throughout the year.

It is found that in this half-time of study, students learn much more than half as much as in full-time study. Learning is somewhat like eating. It is not good to eat constantly, because time is needed for digestion. So with study. By the time a student has studied intensively for five weeks or for three months he may begin to be surfeited with study. (As a rule in our full-time universities students make the necessary adjustments and go slow enough in their studies to prevent being overtired. For a short period a more intensive application is possible.) The time a student is away from study on his job is a period of mental digestion. A kind of mental maturing and growth takes place. He thinks over what he has studied. Some of it becomes clear in his mind. A part, he comes to realize, he never did actually understand. Even though his job is difficult and strenuous, demanding all his attention, yet it is a change and a rest from his school study. Some students prefer to continue their class-reading and studies while at work, but most do not. They use their time in becoming acquainted with practical affairs. They have opportunity to compare what they have studied with what actually takes place.

Often problems turn up on the job which a student cannot answer, even by reference to his books. If he has already graduated, then his teachers are no longer available to help him. If he is going back to his studies in a few weeks he can take the problem back with him and talk it over with his teacher, or he may find the answer in the university library.

As the students return from their jobs to the college each one is asked to write a report on his job experience. His employer also sends a report on the quality of his work. With this information in hand one of the personnel staff at the university calls in the student and talks over his job with him. In this way the student comes to see what he might have learned on his job that he did not learn, and how to make better use of his next working period. As the students returning to their classes talk over their work with each other there is much comparing of experience, which itself is educational. By the time a student has spent several periods on jobs, preferably in a number of firms or departments, on graduation he is not a green theorist. He knows how to take hold of things and to assume responsibility.

Through a considerable amount of experience in numerous institutions using this plan it has been found that the equivalent of a four-year full-time course can be covered in five years, and that in addition the graduates are more matured, experienced and responsible.

From a financial point of view the method is economical. Students are paid for the work they do, and the income helps to meet college expenses. The faculty teaches two sets of students instead of one, and the class rooms, laboratories, library, hostels, etc., serve two sets of students.

The cost per student is somewhat more than half as much as in a full-time college, for two reasons. First, the college year is longer. As a rule in such institutions students attend more than half as long as in a full-time college. Since they have frequent change of work they can put in the extra time without fatigue. Also in some institutions a large part of the first year students put in almost full-time at their studies. This is because many of them never have worked for pay, and have not learned how to be responsible. In some institutions first year students are required to put in ten hours a week of work on the campus under careful direction. There they are taught how to work. By the second year either they are ready to take real jobs at real pay or they are asked to withdraw from the university.

Another reason why the work and study programme costs more than half as much as a full-time college is that a small staff is necessary to find jobs for students, to get the right students into the right jobs, to visit the employers periodically in order to get full co-operation so that a job will have as much educational value as possible, and to talk with the students on their return from jobs to make certain that the students are getting full value from their job experiences and are getting placed in the right jobs. It has been found that each such staff member can care for about one hundred students.

This programme of alternating work and study has great value as a process of vocational guidance. As students come to the university their vocational choices, even after the best available vocational tests are given, are very immature and uncertain. In one institution carrying on the programme of work and study, careful records have been kept of the vocational results. It has been found that during the work and study programme about half the students change their minds as to the vocations for which they are best fitted or in which they are most interested. On the other hand, it has been found that of the graduates of this institution ten years later not more than 10% have changed their vocational fields after leaving college. Thus the vocation finding process is not an arbitrary one, but takes place in the normal course of study and practical experience. In this way a great deal of tragedy and waste and frustration are avoided.

Another advantage of the alternating work and study programme is that students have a chance to find suitable working opportunities. The policy of the best programmes of this kind is to place students in a variety of jobs during their college course, and under a variety of employers. Thus a student sees a variety of working conditions, and can make a more intelligent choice than though he had seen only one. Employers also can see a variety of students and thereby have some judgment of the range of choice available for permanent appointments. As a result of this process, it was found in one such institution which kept careful records, that more than half the students after graduation took positions with firms they had worked with as students. Some went into business for themselves, and about a quarter continued to graduate school.

Valuable as is this programme of alternating work and study, it should not be undertaken lightly. Just as a man would not start a large industry without knowing something of how such an industry is administered, so such a programme should not be initiated without very careful preparation. Many problems must be mastered before a large work and study programme can be counted on to move smoothly and efficiently.

The general programme of alternating work and study is a fundamental addition to educational method.

APPENDIX H

THE TECHNICAL UNIVERSITY, BERLIN (1799-1949), FORMERLY THE TECHNISCHE HOCHSCHULE, CHARLOTTENBURG, BERLIN.

According to a note published in Nature, July 2,1949, p. 16, the Technische Hochschule in Berlin was established in 1879 following the fusion of two existing technical academies : the Gowerbeakademie, a species of polytechnic dating from 1821 ; and the Bauakademie, effectively a technical school for constructional engineers, which was founded in 1799.

The Berlin Technical High School was renamed the Technical University in 1946, and completely in repudiation of its forme reputation, and completely in line with Faustian conception, current today among German Technicians, that technology cultivated without regard to its social and humanistic responsibilities has a ' daemonic power ' over its practitioners. This conception, which was debated with very marked emotional content at the Darmstadt Conference of Engineers in 1947, has led to a movement among the technical high schools to include some sort of ' humanistic faculty ' in their teaching. Aachen and Berlin, at least, have actually taken practical steps in this direction, and it is on these grounds that the Technische Hocheschule Berlin-Charlottenburg now claims the title of University. The German technicians appear, in fact, to be finding for themselves a rationalization of the apocalyptic destruction, material and moral, of the German debacle ; and it may well prove that the outward expression will not be confined in the future to mere platform oratory and piously expressed intentions. On the contrary, the German capacity to rationalize a strong emotional surge in fact and deed may have important consequences in the future bias of technical education in Germany. It is here, if anywhere, that the Berlin pamphlet is significant.

APPENDIX I

NOTE ON POSSIBILITY OF WORKS TRAINING IN THE U. S. A.

The following information received from Antioch College, America, indicates conditions under which Indian students can get first hand experience in American industrial plants and receive pay for their work while doing so. There are more than 50 colleges and universities operating on the co-operative (alternating work and study) plan :—

In all cases where we have worked with foreign students and their placement under the co-operative programme it has been necessary in each instance to get permission from the local Bureau of Immigration for the student to work after we had made the actual placement with the company involved. We understand that now the Bureau of Immigration have recognized the educational advantages of the co-operative plan, and have issued a blanket order to the effect that all students enrolled in co-operative colleges may work and receive pay, so long as their work is an integral part of the college programme.

There are also one or two other programmes now existent under which aliens are given industrial training in this country. One of these is that of the Research Division of Worthington Pump and Machinery Corporation, Harrison, New Jersey. This organization has a training programme under which some sixteen to twenty-four aliens are employed each year. I believe that RCA Manufacturing Corporation of Camden, New Jersey, also has a similar programme, and it would not be a surprise to find that the same is true of both General Motors Corporation and General Electric Corporation. It would be one suggestion that the Ministry of Education contact Worthington Pump particularly for more information about their arrangements. Similar arrangements might be made with other firms, especially those doing business in India.

The following letter of information is issued by the U. S. Bureau of Immigration, Washington D. C. :—

An alien admitted as a student under Section 4 (*e*) of the Act of 1924 is required to pursue a definite course of study in the institution wherein he is enrolled. He must carry a course of study in day classes, consisting of a minimum of twelve semester hours or its equivalent if he is an under-graduate student. If he is a graduate student, he must carry a full programme of study in the amount and of the nature required by the school for completion of the course for which the student is enrolled.

A student who has not been granted permission to accept employment at the time of his admission to the United States may not accept part-time employment after his admission without the prior permission of the District Director of the Immigration and Naturalization Service having jurisdiction over the territory in which the school is located. An application for permission to accept part-time employment must be submitted by the student himself in writing to the District Director. In connection therewith, he must show the necessity for engaging in the employment; the source and the amount of his

income ; the approximate expenses including tuition, board and room, books and miscellaneous items ; and the probable place, hours and nature of the part-time employment and the remuneration to be received therefor. A student will not be permitted to accept part-time employment if the employment will in any way interfere with his carrying a full course of studies in day school, or will result in the student's failing to maintain satisfactory grades in the courses which he is pursuing. A statement from the school to that effect must accompany the application.

Following admission, the student may make application for extension of his student status for an additional period not exceeding one year. Application for an extension should be executed on Immigration and Naturalisation Form I-535 and submitted to the District Director of Immigration and Naturalization having jurisdiction over the territory in which the school is located. The application should be submitted at least thirty days prior to the expiration of the time for which originally admitted, or any extension granted. The application should be accompanied by the student's passport, valid for at least sixty days beyond the date for which an extension is being requested, and Immigration and Naturalization Form 1-94. In addition, the student must submit a statement from the school that he is carrying and will continue to carry a full course of day studies, and that his grades are satisfactory.

A student may transfer from one approved school to another provided he first secures permission from the District Director to do so. The application for transfer should be submitted in writing at least thirty days in advance of the desired transfer. The application should fully set forth the reasons for the transfer and be accompanied by a letter from the school to which transfer is desired showing its acceptance.

A student is required to maintain the status for which he is admitted. Abandonment of his status as a student or failure to comply with the regulations regarding the conduct of students will result in the institution of proceedings to deport such a student from the United States.

APPENDIX J

Public Administration : Philosophy and methods of Schools and other Institutions for Post-Graduate Study and Research in Government and Public Administration. Statements supplied to the Commission by leaders in the Field.

1. By Harold G. Moulton, President of Brookings Institute, Washington, D. C. (Brookings Institute is a private, endowed institution of research ; one of the foremost in America).

Dr. Harold G. Moulton writes :

My comments will deal more with principles than with particulars, and will address themselves more to assessing the place of public administration as an element in higher education than as a field study in itself. Our experience here in training fellows in the fields of government and economics, coupled with the experience of some of our staff members as teachers of courses relating to government, economics, and public administration, leads us to the conclusion that the relative amount of time spent in courses specifically dealing with public administration should be small in comparison to the time spent in other ways, both at the undergraduate and graduate levels. This is the more advisable if the major emphasis of the training programme is to be put on education for the higher range administrative or executive positions. Particularly in undergraduate work every emphasis should be placed on the development of broad orientation in humanistic and cultural fields, together with sound training in whatever particular professional or semi-professional field is most appropriate to the interest of the better student : economics (including public finance), government, engineering, or science. Analysis of the occupations pursued within modern governments shows that by far the greater portion of positions for which extensive pre-service training is required, are more concerned with the professional or semi-professional than with the administrative activities of the service. Analysis of the occupational histories and training of our best government administrators today would show only a very small proportion indeed who had devoted a major share of pre-entry training to the subjects comprised within public administration as such.

Certain tool-subjects should be included within the undergraduate curriculum, such as English Composition, and the relevant language skills (which may bulk large in such a multi-lingual area as India). Other tool-subjects (such as statistics or accounting) can be taken either at the undergraduate level or during the first year of graduate work ; although prospective government servants who expect to specialize in economics as their profession will certainly have to master the elements of these subjects prior to the graduate years. In all cases, there should be sufficient work in comparative government to give the student a clear notion of the major forms of government organization, the legislative, executive and judicial framework within which public administration is carried on, and sufficient background in politics so that the prospective higher official can see his programmes clearly in terms of their relations to the political forces of his country. Such orientation is especially necessary

in any country where the administration is expected to take a major share in the drafting of legislative proposals, programmes, and regulations with the force of law.

Similarly, some of the subjects of public administration as such—public personnel administration, public budgeting, public works administration, and the like—can be introduced during the last years of undergraduate work or combined into a year's work at the graduate level. If it is assumed that the major purpose of the undergraduate programme is to ground the student soundly in the fundamentals of a profession, such courses in administration should be kept subordinate at the undergraduate level. For the most part, they deal with the specific organization and procedures whereby the relevant government agencies deal with personnel, budgeting and the like. Since such specifics change, it is not advisable for the potential higher official to spend much time on them at either the undergraduate or graduate levels. While we at Brookings have never accepted fully the traditional British device of training public servants by putting them through classical education at the great universities, we feel strongly that it is more to the point to develop officials with the imagination, insight, perspective, and grounding in fundamentals which makes it possible for them to understand existing systems and procedures and to devise new ones to meet new conditions, than it is to develop "expertise" in the procedures and details of the moment. Such can best be left to on-the-job experience, and to programmes of in-service training.

Institutions dealing with training for public administration fall into three broad categories. First are those universities which offer training on a philosophical level, such as the Harvard Littauer School and the University of Chicago. Here public administration is offered as part of larger curricula in the social sciences, and every effort is made to keep courses on a high intellectual plane. Other universities, to a greater extent than either Harvard or Chicago, have combined formal course work in public administration with emphasis on jobs in public service, either on paid part-time fellowship, or "internship" bases: included here are Syracuse, Minnesota, Denver, George Washington, and American Universities in Washington. Finally, there are the various bureaus of public administration scattered throughout the country, most of which maintain close contact with a neighbouring university, and combine work for municipal or state governments, taxpayers leagues, and so forth, with university training.

If your major interest for India is in the training of administrative assistants or office managers, you may wish to pay special attention to the training programme at the Maxwell School at Syracuse, which possibly more than any other in the United States has specialized in training administrators who do not expect to deal with issues of broad public policy. Lent Upson of Wayne University has had long experience both as a teacher and specialist in municipal administration. One of the most ambitious curricula is to be found at the University of Southern California, under Emery Olson.

If any one man in the United States can give relevant data and critical appraisal of it, Pendleton Herring, formerly of the Littauer School and now with the Social Science Research Council, New York, can do so.

2. By Dr. Wallace S. Sayre, Professor of Administration of the Cornell University School of Business and Public Administration.

The content of, and the instructional methods for, public administration are still a matter of great controversy in this country among both educators and public officials. I am sure that no one has yet found the one right way, and I believe we have profited more from experiment and variety than we would have from putting all our eggs in one pedagogical basket. This is the first major point I would like to make with respect to your development of public administration training in India : namely, that several different approaches be laid out and that experiment and variety be the watch-word of this educational programme for at least a decade.

Several such experimental paths suggest themselves. First, the British have made long-sustained contributions to the pattern of Indian public administration. This British approach undoubtedly has some sharp limitations for the future (some of them being inherent in its parochialism, i.e. the fact that its educational and administrative premises rest heavily upon nineteenth century British culture, and some being found in the understandable rejection by India of the premises of colonial administration implicit in some British methods in India. Nevertheless, the British approach to administration especially as it may be modified to meet the political and economic assumptions of present day India, no doubt has some strength. Accordingly, I should, think that some of the public administration effort in India should follow the British pattern. You will be in the best position to determine in what areas this is most promising.

A second approach might be described as the American one. This approach as you know, is decidedly more pragmatic, emphasizes the social sciences much more than does the British, and draws heavily upon American technology, especially managerial " know how ". I would guess that the American approach, correctly modified to make sense in present day India can make an indispensable and powerful contribution to Indian public administration. It is true, of course, that even within this American approach there must be several types of emphasis : the broad social science, policy oriented programme of the Harvard Littauer School ; the practical managerial emphasis upon tools of administration in the Syracuse University Maxwell Graduate School ; and the attempted synthesis of business and public administration in this school at Cornell University. There are other useful patterns, including certainly the one established at Antioch.

Still another approach might be described as the indigenous Indian approach. I do not know much about this (indeed I do not know whether it exists except in rudimentary form), but whatever its present state, it should be encouraged. I have the strong conviction that public administration is not a body of knowledge and techniques which can be imposed upon a culture, but that instead it must ultimately arise out of and be a natural expression of the values and methods relevant to the culture in which it is to be used. This is not to say that nothing can be imported ; in fact, I should think much of value can be imported, but the most careful attention must be laid to that process

of reciprocal modification which will insure the integration of the imported premises and techniques into the core of Indian society.

Another way of stating the variety of approaches which ought to be tested is to note that some public administration can be taught at what we call the high school level, even more may be taught at the under-graduate college level, but much must be taught at a professional or graduate level. In a country as large and whose future is as rich as is that of India, beginnings should be made at all of these levels.

Still another way of stating the variety of approaches is to distinguish between the content and the methods which need to be emphasized, depending upon whether the main objective of the programme is to staff the local level of administration, the provincial level, or the national level. In considerable degree these areas over-lap, but in the United States we have found great values in the selection by a particular institution of the level of administration to which it aims to give primary emphasis.

All of these approaches, it seems to me, ought to be included in any comprehensive plan for India.

For all of these programmes I should like to emphasize the importance of the concepts and the methods of democratic administration. Our own American tradition in the literature and the teaching of administration is too authoritarian, in the main, for my taste; the British tradition on the other hand if I may make a somewhat narrow distinction, has been too aristocratic. We are now making considerable progress toward correcting our bias. If I understand Mr. Nehru's aspirations correctly and if I understand the direction in which India is moving, I believe that the importations into India of our public administration concepts should be carefully selected from among our newer democratic ideas. I refer especially to the rejection of much of the scientific management movement in favour of the human relations approach in public administration; and, even more especially to the modifications of the human relations movement into fundamental agreement with democratic premises and methods. The writings of Elton Mayo, Chester Barnard, Fritz Roethlisberger, Ordway Tead, Mary Follett, Kurt Lewin, Rensis Likert and others reflect this trend.

From the very little I know about your problem in India I would hazard the hypothesis that greatest efforts should be made to wed the social sciences with the technological studies, rather than to following the British pattern of reliance upon the humanities. This is no doubt an American bias. But I suspect that, for the immediate future at least, India needs most to develop, perhaps especially at the local and provincial levels, a great body of engineers and other technically skilled and professional people who also know how to manage public enterprises.

This combination of social sciences and the technological studies would seem to suggest courses, beginning at the advanced high school level and continuing through undergraduate and graduate years, which would emphasize sociology, political science, social psychology, social anthropology, economics

statistics, accounting, as well as the more clearly technological studies—all in the American version of these fields of knowledge and skill rather than in the more abstract and philosophic British pattern.

In the teaching of these subjects the pragmatic and realistic emphasis might well be sought even at the temporary cost of over-specialization and some loss of perspective. This would mean laboratory work in public administration, post-entry training for many present employees, and the use of case studies in instruction.

3. By Charles R. Cherington, Secretary of the Graduate School of Public Administration of Harvard University. (The Littauer School).

There has been very considerable development in both the philosophy and practice of education for public administration during the past fifteen years. This School (the Graduate School of Public Administration) has played an active role in such development since 1937. However, it should be pointed out that we represent merely one strand and, in a sense, one line of philosophy and practice. When Mr. Littauer made his relatively generous gift to the University there was considerable discussion as to how it should be used to further education in this field. After extensive debate, it was agreed that at least for an experimental period we should have a relatively small school (our present enrolment is 87 students) of more or less mature students most of whom would have had earlier experience as civil servants. It is our belief that the best training for civil servants in the middle and higher reaches of the service is advanced graduate work in the social sciences, more particularly in economics and in political science. So far, we have proceeded along these lines dividing our resources between relatively large fellowships for promising young civil servants and specialised research undertakings by the senior members of our Faculty. With few exceptions, our Faculty members are drawn from the more experienced members of the great Departments of Economics and Government here at Harvard. Almost all of these men have themselves been active in the Civil Service as advisers and/or administrators. Consequently, the atmosphere here in the Littauer Centre is not so ratified as one might suppose.

At present, more than half of our students are in residence with us for two or more years and are candidates for a doctor's degree either in economics, political science, or in political economy and government. We also have some students who are with us for one year only and who, after the completion of a year's work, are awarded the degree of Master in Public Administration.

The instruction consists of regular courses offered by the Faculty of Arts and Sciences *plus* selected seminars offered and financed by this School. If we ever obtain larger resources, we shall endeavour to develop more of our own specialized courses and seminars in order to strengthen the distinctive quality of our curriculum.

Very few of our people are interested in the lower reaches of the Civil Service or the more routine aspects of public administration such as personnel, purchasing, etc. Furthermore, to date we have done relatively little in training men for state and local services. The latter, I think, is a distinct weakness in our programme and I hope that it will be strengthened in the future.

4. By Mr. J. Roman, Director of the Graduate Division for Training in Public Service, of New York University. (The New York State Civil Service Commission, cooperating with two universities, sponsors a graduate training programme.)

The New York State Internship Programme was started last year and provides for thirty interns to be selected each year from nominees by colleges and universities offering programmes in public and business administration. Twenty-five of this total must be residents of New York, the other five may be from outside the state. From the nominees the intern group is selected through a series of pool interviews by representatives of the departments of the state government in which the internship positions are located. All intern positions are carried on the budget of the State Civil Service Commission and are allocated to the other departments on the basis of plans submitted by them. These plans are reviewed by the Civil Service Commission and by the Sponsoring Committee for the programme. The Sponsoring Committee, appointed by the Governor and consisting of representatives from New York University and Syracuse University and from the State departments, sets the general policy and supervises the broader aspects of the internship programme. The interns are brought together at bi-weekly conferences to share their experiences. The sessions are conducted by a coordinator who is a member of the faculty of one of the universities in New York State. At the conclusion of the internship, students may take open competitive examinations for permanent positions in the state service.

The programme of graduate courses in Albany is financed by the two universities with the state contributing space for classes and the facilities of the New York State Library. A sufficient number of courses will have been offered at the conclusion of the current academic year to have enabled a student to complete the residence requirement for the Master of Public Administration degree.

Another development which may interest your Commission is the internship established by the Graduate Division for Training in Public Service of New York University with the City of White Plains. In this project the intern studies at first hand the social and economic pattern of the city and meets with leaders of the various civic, business, labour, religious and racial groups. Having discovered the problems and stresses in the community, he observes the organization and functioning of the political parties and how they respond to these pressures. To watch how policy is made he sees the city council and the mayor in action and then observes through rotating assignments in each of the municipal departments how these policies are administered. Each intern is given a general assignment that gives direction to his duty and he is supervised by a faculty member at the University and the office of the Mayor at White Plains. White Plains is a city small enough to be comprehensible to the student but sufficiently large to afford a good laboratory for the study of municipal administration.

Another significant development, we believe, is our Seminar Project wherein we apply the project method of education to graduate study in the field of public administration. The plan grew out of the conviction of the

faculty that the discipline of group research, group conference and group decision was better adapted to the requirements of persons entering upon careers in government than the traditional formula for master's degree work with its emphasis on individual research. The plan calls for the selection each year of a timely problem in the field of public policy and administration for group study. The problem is selected both with a view to utilizing the rich field laboratory afforded by the New York Metropolitan Area and to contributing to public knowledge and understanding of an important question in metropolitan government and economic life. The group works in an apprentice relationship to the faculty members in charge, engages in field study, meets regularly for conference and finally drafts a group report. Close faculty supervision is provided throughout and the cooperation of federal, state and local agencies is enlisted. In 1946-47 a pilot group studied " Airport Administration and Finance in the New York Metropolitan Area ". In 1947-48 the group did a study on " The Administration of Licensing and Inspection in New York ". This latter was undertaken in cooperation with the Citizens Budget Commission of New York and with the Mayor's Executive Committee on Administration. Currently our project group is doing a survey of that area in Mahattan adjacent to the United Nations site. From this study undertaken at the request of the City Planning Commission of the City of New York we expect to make recommendations for the re-zoning and re-development of the area. Students participating in the project are permitted at the discretion of the faculty to substitute their contribution to the group study and report for the master's dissertation.

Our experience in public service training has convinced us that good grounding in basic social science is desirable for students intending to specialize in public administration. This basic work should include some sociology and social psychology as well as general work in economics and government. The student ought to be aware of group problems and dynamics and know something of the economic environment in which government operates. In addition the student ought to be equipped with the tools of statistical method and a knowledge of basic accounting. The curriculum in state and local government ought to include these two techniques if the students do not already have them. The curriculum in state and local government ought to include a course in municipal government and administration, state government and administration, administrative organization and management techniques, financial administration, a survey course familiarising the student with the legal concepts that are important for a state or city official to know in connection with his administrative responsibilities.

5. The Syracuse University Programme. By Dr. Paul H. Appleby, Dean of The Graduate School of Citizenship of Syracuse University. (This is one of the oldest programmes in the field. It provides more training for state and local public administration than does Brookings Institute or the Littauer School at Harvard).

We are of the opinion that there is little detailed pre-requisite work that students should engage in before entering a concentration in public administration. In one of our graduate classes in public administration known as the

300 programme we accept college graduates from any and all fields of major concentration. They include Political Science, Economics, Sociology, History, Engineering, French, Accounting, Journalism, etc. In choosing our candidates we endeavour to find students who have been outstanding in their chosen fields, and, equally important, students who exhibit an interest and social consciousness which attracts them to a public service career. If there is one criterion which we advocate, it is that the student should have a broad background in as many of the Social Sciences as is possible for him to carry in his undergraduate career. We feel that careers in public service are best fulfilled when the student has the prior capacity to understand the social, economic, and semi scientific world in which he and the other one hundred forty million Americans live and prosper.

We do offer an undergraduate course in public administration here at Syracuse University. Normally, three-fourths of all major students in Political Science and many others from Business Administration, Forestry, etc., participate in this very large lecture and discussion course. The course has been and is taught under the very able Finla Crawford for at least the past twenty-five years. In that course Professor Crawford uses L. D. White, *Introduction to Public Administration* as a basic text, to some extent Marx, *Elements of Administration*, and supplements with many other books which require analysis by the student, and a goodly number of case studies. The format of the course follows L. D. White rather closely. Some of the other books which are given to the students for intellectual stimulation are Waldo, *The Administrative State*; Mooney and Reilly, *Onward Industry*; Gaus, *Reflections on Public Administration*; L. D. White, *Government Career Service*; Kingsley, *Representative Bureaucracy*; Harold Smith, *Management of your Government*; and my own *Big Democracy*. Basically, we do not feel that a student should major in public administration *per* as an undergraduate. If he is advanced intellectually, we do allow him to take a course in Administrative Law, Budget, and/or personnel; this additional work not to exceed nine hours. In addition, however, he must fulfil the major requirements for a degree in Political Science which include course offerings in three other areas of Political Science, plus minor work in another social science department. The average student therefore has only time and energy sufficient to take the single basic course in public administration.

My own ideas on the question submitted are basically sympathetic to the British approach, although pointed perhaps half way between the British and typically American approaches.

In other words, it is my opinion that a broad, liberal arts education is basic for acceptable work in public administration, and if I had to choose between persons who had only general education and those who have little of that and a good deal of specialized education designed particularly to equip for public administration, my choice would be the former. However, I don't believe it is necessary to pose such a choice. I do believe that the work in the social sciences generally may be a very adequate vehicle of general education and that work in political science and some kinds of courses in public administration have similar values in addition to providing desirable special orientation.

I am not very sympathetic to the engineering, mechanical, or procedural approach to public administration that has been rather popular with a good many in this country. I think it is relatively easy to produce specialists, and that the tendency in our country is to put specialists in positions too high for them to occupy successfully. It seems to me that the greatest need is to do more about turning out persons qualified to serve at high hierarchical levels in government there to deal with the complicated relationships of many specialized bodies of information and conflicting or inconsistent social values and social forces.

This school has actually succeeded amazingly well in turning out people who have gone high as city managers in state government departments, in the national government, and in international organizations. We have never purported to turn out persons especially qualified as budgeteers, as personnel administrators, or as subject-matter-specialist-administrators of any kind. Rather we have sought persons with a great deal of background in general education and particularly in political science, history, economics, sociology, and the like, and we have attempted to give those persons a general understanding of budgeting, personnel administration, the use of statistics, accounting, organizational and managerial methods, against a background of political and administrative theory.

In our best known programme in public administration, which is a programme of twelve calendar months looking towards a Master's degree, we don't follow the normal pattern, but instead use " the block system, " in which the students concentrate exclusively and successively on one subject after another. The present programme involves 17 successive subjects. This means that we're not tied to rigidities of all three-hour courses or all four-hour courses, but may work out a composite programme of one, two, three, four, five and six-hour courses. In addition, the students, who are drawn from all over this country and occasionally from other countries, all work together constantly. We find that with their diverse backgrounds this working situation is an important feature to our programme. It is one of our underlying beliefs that one of the most essential things of successful public service is an understanding of our society, and the diverse backgrounds of our students and their working situation tends to provide a wider and deeper understanding of our social order than would be obtained by any normal procedure.

6. Dr. George A. Graham of the Department of Politics of Princeton University wrote : " There are two developments since 1911 in training for Public Administration which you would probably wish to note :

(1) There has been a definite effort which has met with some success to combine political and economic data in courses of instruction. This seems to me to be a very sound development.

(2) There has been some experience with preparation of new " case material for instructional purposes. These case studies are actual administrative problems. Some of them are fairly extensive in scope. They attempt to present a fairly complete clinical case report on an administrative problem and the way in which it was handled. There is in existence a committee on Public Administration Case Studies under the joint auspices of Princeton, Cornell, Syracuse and Harvard, which is preparing case materials. "

7. By Dr. Roscoe C. Martin of the Bureau of Public Administration at the University of Alabama.

There probably should be no important distinction between training for public administration and training for life—politics, participation in civic affairs, community leadership, etc. There is a tendency, in our judgement, to vocationize public administration overmuch. We favour a broad approach to the subject at the College and even at the university level, on the theory that a person so trained can pick up the tools of a specific trade after his formal training has been completed. This is the English as opposed to the American view of training for the public service.

I suspect there is a real need, in India as in America, for more intermingling of governmental and academic life. Professors ought to do occasional stints as public servants, through the device of leaves of absence ; while public administrators ought to be invited in to lecture, and where they are qualified actually to conduct classes in the universities. Those in college or University training for the public service ought to be given an opportunity to savor that service at first hand, through internships, field projects, etc. Those already in the public employ should be given opportunity to return to college for occasional re-training courses. This might be handled through the device of in service fellowships. There are many other devices by which academic and public life might be cross fertilized. It is our judgment that the surface has hardly been scratched here.

8. By Lloyd M. Short, Director of the Public Administration Training Programme at the University of Minnesota.

With reference to under-graduate work, we prefer that our students have had a broad general education but including a substantial amount of work in the several social sciences and particularly political science. We also encourage the beginning of study in statistics and accounting as undergraduates. Despite these preferences, we admit students who have graduated in engineering, and agriculture even though they may have had only a very nominal amount of work in the social sciences. For such students, of course, the graduate study programme must be directed much more strongly toward the social science field. We do not have any fixed curriculum for graduate students engaged in the study of public administration. We do require of all students enrolled a graduate seminar in public administration which is devoted to the study of principles and problems of administrative organization, personnel and fiscal management, and administrative responsibility in a democracy. If our students have not had such courses in their undergraduate study, we strongly recommend courses in constitutional and administrative law. Beyond this our students select courses from a variety of schools, colleges and departments depending upon their special interests in preparing for a public service career. Some students for example are preparing for careers as city managers, others seek to enter the field of tax administration, personnel management, public welfare administration and the like. We have felt from the inception of our programme in 1936 that it was unwise to establish a fixed curriculum for all of our students.

As to post-graduate courses, the Minnesota programme avoids a formal sequence of courses, Dr. Short writes : " We do not have any fixed curriculum

for graduate students engaged in the study of public administration. We do require of all students enrolled a graduate seminar in public administration which is devoted to the study of principles and problems of administrative organization, personnel and fiscal management, and administrative responsibility in a democracy. If our students have not had such courses in their undergraduate study, we strongly recommend courses in constitutional and administrative law. Beyond this our students select courses from a variety of schools, colleges and departments depending upon their special interests in preparing for a public service career. Some students for example are preparing for careers as city managers, others seek to enter the field of tax administration, personnel management, public welfare administration and the like. We have felt from the inception of our programme in 1946 that it was unwise to establish a fixed curriculum for all of our students."

9. By Dean Lent D. Upson, Director the School of Public Affairs and Social Work at Wayne University, Detroit, Michigan.

For our regular students doing graduate work leading to the degree of Master of Public Administration we expect all blanks in the undergraduate curriculum to be made up plus some sort of specialization—administration proper, public housing, personnel or possibly public finance although we are weak in that branch at the moment. The following is a check list of courses that are required or recommended, which is put in the folder of each graduate students and checked as he takes the courses :—

Courses.	Hours
Constitutional Law (First semester required)	2
Constitutional Law (Recommended)	2
Administrative Law (Required)	4
Principles of Public Administration (Required)	2
Principles of Public Administration (Required)	2
Administrative Organization and management (Required)	2
Administrative Organization and management (Strongly recommended) ..	2
Public Finance (Recommended)	2
Public Finance (Recommended)	2
Government Budgeting and Accounting (Required)	2
Statistical Theory (or any good course in statistics)	2
Public Personnel Administration (Required)	
Public Personnel Administration (Recommended)	2
Mental Hygiene (Highly recommended)	2
Thesis Direction (Required of Graduate school)	2
Thesis Direction (Required of Graduate school)	6
Technique of Social Research	2
Governmental Accounting (For those specializing in Finance)	2

You will note that we repeat a number of courses which the student should "make up" if he has not had them on the undergraduate level. In addition, we require a good course in principles of public administration, administrative

law, administrative organization and management, governmental budgeting and accounting, and public personnel administration. A course in mental hygiene is highly recommended because we believe a public administrator should understand why people act like human beings.

The required and recommended courses run well over the 24 hours for the master's degree, but this check list enables us to appraise what the student has had in his undergraduate years as well as what he is taking as graduate work.

In our " Voelker Programme ", which is limited to a dozen students under fellowships, we teach by the end-on-end method, *i.e.* one subject at a time for two or three weeks which enables us to cover in the general, but not in a specific way a large number of subjects.

We borrowed the idea of " end-on-end " courses from Syracuse University which has used it in training in public administration for a long time, and from the army method of instruction, which follows the theory that a large amount of information can be cramed into students over a short period. This latter feature has not materialized in our own programme (which is its principle short-coming) probably because we find it impossible to force students to work under pressure.

However, we have retained the " end-on-end " feature as infinitely superior to the " parallel course " feature because we wish students to be familiar with a large number of subjects, which could not be covered in the more conventional way. For example, we will cover this year—citizen organizations, the structure of government, legislative procedure, political theory, state constitutions, political parties, public opinion polls, public law, accounting, prosecution, statistics, taxation, budgeting, personnel, fire, police, judicial administration, juvenile delinquency, education, public health, public welfare, housing, public works, public structures, municipal utilities, planning, and perhaps a half a dozen more isolated subjects—in a ten-hour course each semester.

We will have 40 or 50 lecturers presenting their subjects for one to two weeks each, although some of them are available for only one day. We do not intend to turn out specialists, but rather to give our students a speaking acquaintanceship with the wide complex of subjects which goes to make up public administration.

At the same time we can familiarize students with the personalities, ideas and ideals of the leading people in the field. We believe that by giving our students a broad perspective, they can become specialists in short order after they have finished their academic education and are actually up against the necessity for such specialization. For example, one of the members of your Commission was successively head of the Miami Conservation District, of Antioch College, and of the TVA, each of which required its own peculiar specialization and for which only a broad background of experience and education was necessary.

Combined with three days a week of " end-on-end " instruction is concurrent field work for three days a week followed by three full months of field work, —which is not entirely dissimilar from the Antioch " work-study " plan.

We offer " end-on-end " instruction only in our Voelker Programme which is limited to a dozen or so students and is expensive. We offer the conventional parallel courses in our regular curriculum in public administration.

Possibly the more conventional teaching methods have their place in the ordinary University. But certainly where there is a wide field to be covered in a short time the " end-on-end " has distinct advantage. For instance, we cover a semester of work in accounting and statistics in two weeks each. Our students do not learn as much as in a semester course in these subjects, but they do learn enough to feel their way around in the two subjects and acquire the language and a basis for specialization if that is necessary.

10. By John. E. Bebout, Assistant Secretary of the National Municipal League, New York.

The following American Universities have schools or Departments of Public Administration, with Graduate training :—

University of Alabama, Bureau of Public Administration, Roscoe C. Martine, Director.

University of California, Berkeley, Bureau of Public Administration, Samuel C. May, Director.

University of California, Los Angeles, Bureau of Government Research, Winston W. Crouch, Director.

University of Colorado, Bureau of State and Community Service, D. Mack Easton, Director.

University of Hawaii, Legislative Reference Bureau, Gilbert G. Lenta, Director.

University of Connecticut, The Institute of Public Service, Joseph M. Loughlin, Director.

Indiana University, Bureau of Government Research, Ethan P. Allen, Director.

Kansas State College of Agriculture and Applied Science, Institute of Citizenship, Robert A. Walker, Director.

University of Kentucky, Bureau of Government Research, J. E. Reeves, Acting Director.

Bowdoin College, Bureau for Research in Municipal Government, Orren C. Hormell, Director.

Harvard University, Bureau for Research in Municipal Government, Morris B. Lambie Director.

Massachusetts State College, Bureau of Public Administration, Charles J. Rohr, Director.

University of Michigan, Bureau of Government, Robert S. Ford, Director.

University of Minnesota, Municipal Reference Bureau, C.C. Ludwig, Director.

University of Mississippi, Bureau of Public Administration, Robert B. Highsaw, Director.

University of New Hampshire, Bureau of Government Research, Norman Alexander, Chairman.

Princeton University, Princeton Surveys, John F. Sly, Secretary.

University of New Mexico, Division of Government Research, Thomas C. Connelly, Director.

University of Oregon, Bureau of Municipal Research and Service, Herman Kehrli, Director.

University of Pennsylvania, Institute of Local and State Government, Stephen B. Sweeney, Director.

Pennsylvania State College, The Institute of Local Government, Harold F. Alderfer, Executive Secretary.

University of South Carolina, Bureau of Public Administration, George R. Sherrill, Director.

University of South Dakota, Governmental Research Bureau, W. O. Farber, Director.

University of Tennessee, Bureau of Public Administration, Lee S. Greens, Director.

University of Texas, Bureau of Municipal Research, Stuart A. MacCorkle, Director.

University of Virginia, Bureau of Public Administration, Rowland Egger, Director.

University of Washington, Bureau of Public Administration, Donald H. Webster, Director.

Most of these organizations are engaged more or less formally or informally both in graduate and in service training for public service. Among the more outstanding graduate training programmes in public service are those being conducted by Syracuse, Harvard, New York University, Denver, Wayne, and Minnesota Universities. Among the most interesting in-service training programmes are those conducted by the Institute of Government, University of North Carolina, Institute of State and Local Government of the University of Pennsylvania, and the Institute of Local Government of State College of Pennsylvania. New York University and Syracuse University cooperate with the State of New York in a very interesting apprentice training programme.

APPENDIX K

BIBLIOGRAPHY OF IMPORTANT BOOKS IN THE FIELD OF HUMAN RELATION IN INDUSTRY

1. Human Relations

Management and the Worker, Roethlisberger and Dickson, Harvard University Press.

Leadership in a Free Society, North Whitehead, Harvard University Press.

Human Problems of an Industrial Civilization, Elton Mayo, Harvard University Press.

Social Problems of an Industrial Civilization, Elton Mayo, Harvard University Press.

Management and Morale, Roethlisberger, Harvard University Press.

The Dynamics of Industrial Democracy, Golden and Ruthenberg, Harpers.

Mutual Survival : The Goal of Unions and Management, Wight Bakke, Yale University Press.

Human Relations in Industry, Berle Gardner, University of Chicago Press.

Psychology in Industry, Norman Maier, Houghton Mifflin Company.

Industry and Society, William Whyte (ed), McGraw-Hill.

Human Relations in the Restaurant Industry, William Whyte, McGraw-Hill.

The Yankee City Series, Lloyd Warner and associates, Harvard University Press.

Creative Experience, Mary Parker Follett, Longmans Green and Co.

Collective Bargaining in The Steel Industry, Harbison, Princeton University Press.

Industrial Conflict, Yearbook of the Society for the Psychological Study of Social Issues, 1939.

Causes of Industrial Peace, a series of case studies now being published by the National Planning Assoication, Washington D.C.

The Peckham Experiment, Innes H. Pearse and Lucy H. Crocker, George Allen and Unwin, Ltd., London.

Experimental Study of Leadership in Social Groups, Lewin and Lippett, University of Iowa Press.

The Best Journals :—

Personnel, American Management Association.

Advanced Management, Society for the Advancement of Management.

Social Issues, Society for the Psychological Study of Social Issues (ed. Ronald Lippett, Research Centre for Group Dynamics, University of Michigan).

Journal of Social Psychology, American Psychological Association.

Applied Anthropology, Conrad Aremberg, Department of Sociology, Hunter College, New York City.

Labor and Nation, Solomon Barkin (ed), International Textile Workers, CIO, New York City.

2. Dynamic Psychology :—

Psychology and Human Living, Walter Langer, D. Appleton-Century Co.

Principles of Abnormal Psychology, Maslow and Mittlemann, Harper and Brothers.

The Happy Family, Levy and Munro, Knopf.

Personality and the Cultural Pattern, Plant, The Commonwealth Fund.

Explorations in Personality, Henry E. Murray and associates, Harvard University Press (2 vol.)

Personality and the Behaviour Disorders, J. McV. Hunt (ed), The Ronald Press Company.

3. Personnel Administration :—

Personnel Administration, Pigors and Myers, McGraw-Hill.

Union Policies and Industrial Management, Sumner H. Schlicter, Brookings Institution.

Personnel Administration, Tead and Metcalf, Harper and Brothers Plus many of the items under (1) above.

APPENDIX L

Bibliography of examinations and Testing

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2. American Council on Education (1942). *Higher Education and National Defence Bulletin No. 36.* Washington, D. C. The American Council on Education.

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4. Conard, H. S. (1944) " Statistical Methods Related to Test Construction and Evaluation. " *Review of Educational Research*, XIV, No. 1 (February), 110-126 pp.

5. Co-operative Test Service (1938). *Cooperative Achievement Tests, A Booklet of Norms.* New York, The Cooperative Test Service of the American Council on Education.

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7. Crawford, Albert B., & Burnham, Paul S., *Forecasting College Achievement.* New Haven : Yale University Press ; London : Geoffry Cumberlege : Oxford University Press. In the appendix of this book there are approximately 300 titles of books and articles on objective examinations and tests.

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9. Graduate Record Examination (1941a.). *A Memorandum on the General Character and Purpose of the Examination Including a Summary of Initial Studies of its Validity.* New York : The Carnegie Foundation for the Advancement of Teaching.

10. Hawkes, Lindquist, and Mann. 1936. *The Construction and Use of Achievement Examinations.* Boston, Massachusetts : Houghton, Mifflin Co., 497 pp.

11. Hildreth, Gertrude H. (1939). *A Bibliography of Mental Tests and Rating Scales.* New York : Psychological Corporation.

12. Kandel, I. L. (1936). *Examinations and their Substitutes in the United States.* New York : Psychological Corporation.

13. McConn, Max (1935). *Examinations Old and New : Their Uses and Abuses.* Educational Records, XVI, No. 4 (October), 375-411 pp.

14. *Manual of Examination Methods*, University of Chicago Press, 177 pp. **1937.**

15. *Mental Measurement Yearbook.* New Brunswick, New Jersey : Rutgers University Press. Issued periodically. A comprehensive compilation of standardized tests, about 400 pp.

16. Terman, Lewis M., and Merrill, Maud (1937). *Revised Stanford Binet Scales.* Boston : Houghton Mifflin.

17. Thorndike, E. L. (Circa 1927). *The Measurement of Intelligence.* New York : Bureau of Publications, Columbia University.

18. Thurstone, L. L. (1937). *The Reliability and Validy of Tests.* Ann Arbor Michigan : Edwards Brothers.

19. Tyler. *Constructing Achievement Tests* 1934. Columbus, Ohio : Ohio State University Press, 110 pp.

20. United States Armed Forces Institute (1944) *Examiners Manual, Tests of General Educational Development* (*College Level*). Washington : The American Council on Education.

21. U. S. War Department (1942). Personnel Classification Tests.

22. Wood, Ben D. (1940). *Ten Years of the Co-operative Test Service.* Educational Records, XXI No. 3 (July) 369-380 pp.

A Partial and Annotated List of Test Publishers and Test Sources.

Educational Testing Service, New York, N. Y.—Princeton, N. J.—Berkeley, Calif.

Dispenses information regarding testing programmes, problems, interpretations and use of test materials. Publishes achievement tests for high school and college use. Now handles Cooperative Test Service of the American Council on Education and the Graduate Record Examination of the Carnegie Foundation.

The Psychological Corporation, 522 Fifth Avenue, New York.

The test service division publishes and distributes almost all existing tests. Aims to assist in the development and proper use of mental tests and measuring devices. Gladly furnishes advice wherever possible.

Teachers College, Columbia University, New York.

Offers tests and test materials for practically every need in the educative process.

World Book Company, Atlanta, Georgia.

Offers a great variety of standard tests and related materials.

APPENDIX M

The following samples of Examinations are reprinted here with the permission of the Educational Testing Service, New York, N. Y., but all copy right privileges are reserved and they cannot be reprinted except by permission of the owners.

AMERICAN COUNCIL ON EDUCATION

Psychological Examination

For High School Students

GENERAL INSTRUCTIONS

This examination is different from the ordinary school examinations to which you have been accustomed. The plan for each of these tests is as follows. First, you are given detailed *instructions* about the test, so that you know just what you are expected to do. Then you have some *practice problems*. Then you go to the *test proper*. This is the procedure for each of the four tests in this examination.

The four tests in this examination represent a variety of tasks. Two of them involve thinking of a quantitative sort, while the other two require more linguistic ability. If you find one test hard, do not be discouraged ; you may find the next test easier. Nevertheless you should do your best on all the tests.

People differ markedly in the speed with which they can do these different tests. The tests are long enough to keep everyone busy for the whole time, and you are not expected to complete the tests in the time allowed. By noting how many questions you can answer in a certain length of time, we can determine your speed on each kind of test. You must begin to work on a test promptly when the examiner calls the starting time and stop immediately when he says " Stop." Do not begin a test until the examiner gives the starting signal for that particular test. Do not turn back to a test after the time for it has expired. You are to work on each test during, and only during, the specified time as announced by the examiner in charge.

You are to record your answers on a separate answer sheet rather than on the pages of the test booklet. Instead of writing down your answers, you will record each answer by blackening the space between a pair of lines. *Do not make any marks or record any answers on the pages of this test booklet.*

Your answer sheet will be scored accurately if you observe carefully the following directions :

1. On the answer sheet, find the *section* which corresponds to the practice problems or to the test proper on which you are working.

2. Then find the *row of answer spaces* which is numbered the same as the question you are answering.

3. Then find the *pair of dotted lines* which corresponds to the answer you choose and blacken the space.

MISPLACED ANSWERS ARE COUNTED AS WRONG ANSWERS.

4. Indicate each answer with SOLID BLACK PENCIL MARKS drawn vertically between the two dotted lines. Solid black marks are made by going over each mark two or three times and by pressing firmly on the pencil.

5. Make your marks as long as the dotted lines.

6. If you change your answer, erase your first mark completely.

7. Make no unnecessary marks in or around the dotted lines.

8. Keep your answer sheet on a hard surface while marking your answers.

9. Make no folds or creases in the answer sheet.

10. *No scratch paper* is allowed for any of these tests. The answer sheet contains a special section which may be used for scribbling.

11. Fold the pages of your test booklet back so that *only one page is visible.* Place the test booklet to the left. Keep the answer sheet under the test booklet so that the answer spaces being marked are as close as possible to the questions being answered.

(Omit the next paragraph unless the tests are to be machine-scored.)

The examination will be scored by an electric test-scoring machine, which makes use of the fact that a solid black pencil mark will carry a current of electricity in the same way that a copper wire does. LIGHT PENCIL MARKS MADE WITH A HARD PENCIL WILL NOT CARRY A CURRENT OF ELECTRICITY ! The machine will not give you a correct score unless you indicate your answers with solid black pencil marks made with the *special* pencil which is provided. Do not use any pencil other than the special one provided. The machine cannot distinguish between intended answers and stray pencil marks. If you are careless in erasing or if you leave unnecessary marks on or near the pairs of lines, such marks may be counted by the machine as wrong answers with the result that your score will be lower than it should be.

Wait until the examiner gives the starting signal for the first set of practice problems.

1948 Edition.

SAME-OPPOSITE

Practice Problems

The word at the left in the following line is " many ".

1. many	(1) ill	(2) few	(3) down	(4) sour

One of the four words at the right means either the *same* as or the *opposite* of " many ". The word " few," which is numbered 2, is the opposite of " many". In the section of the answer sheet labeled " SAME-OPPOSITE, Practice Problems, Page 3," space number 2 in the first row has been blackened[1].

The word at the left in the second example is " ancient." Select the one of the four words at the right that means the *same* as or the *opposite* of " ancient ". In the second row on the answer sheet, blacken the space which corresponds to the answer you have selected.

2. ancient	(1) dry	(2) long	(3) happy	(4) old

You should have blackened the space numbered 4 because 4 corresponds to " old," which means the same as " ancient."

In each of the following lines select the word that means the *same* as or the *opposite* of the word at the left. On the answer sheet, blacken the space which corresponds to the answer you have selected.

3. deep	(1) blue	(2) shallow	(3) tense	(4) watery
4. awkward	(1) clumsy	(2) loyal	(3) passive	(4) young
5. hot	(1) dry	(2) cooked	(3) red	(4) cold

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

1948 Edition.

[1]. See P. 696 for method.

In each row, select the word at the right which means the *same* as or the *opposite* of the first word in the row. Blacken the space which corresponds to the word you have selected.

SAME-OPPOSITE

1. famous	(1) renowned	(2) faithful	(3) renewed	(4) destined
2. cowardly	(1) buoyant	(2) brave	(3) bóyish	(4) callous
3. stingy	(1) tart	(2) generous	(3) distinct	(4) positive
4. moderate	(1) modern	(2) miry	(3) extreme	(4) mental
5. tremendous	(1) brilliant	(2) crude	(3) slight	(4) past
6. guilty	(1) pungent	(2) innocent	(3) crumpled	(4) garish
7. dismal	(1) ready	(2) furious	(3) strong	(4) cheerful
8. respectful	(1) deferential	(2) physical	(3) remedial	(4) several
9. random	(1) haphazard	(2) rude	(3) feeble	(4) pure
10. traditional	(1) nocturnal	(2) radial	(3) obtuse	(4) customary
11. authentic	(1) triumphant	(2) geniune	(3) generous	(4) distinguished
12. zestful	(1 stormy	(2) tough	(3) eager	(4) lengthy
13. staunch	(1) cozy	(2) uneven	(3) unwavering	(4) stupid
14. brawny	(1) clever	(2) dim	(3) hazy	(4) puny
15. humid	(1) humorous	(2) dry	(3) solid	(4) frigid
16. ferocious	(1) mild	(2) felicitous	(3) petulant	(4) fervent
17. fatigued	(1) hasty	(2) plastic	(3) fanatic	(4) refreshed
18. immense	(1) prodigious	(2) bloody	(3) wistful	(4) vulgar
19. elastic	(1) trivial	(2) resilient	(3) valid	(4) humorous
20. erroneous	(1) solemn	(2) correct	(3) ironic	(4) tragic
21. baseless	(1) earthly	(2) groundless	(3) domestic	(4) basted
22. bashful	(1) patient	(2) eligible	(3) parallel	(4) diffident
23. defensive	(1) pensive	(2) offensive	(3) valid	(4) depressed
24. Infamous	(1) dauntless	(2) honourable	(3) contagious	(4) intricate
25. disheveled	(1) distracted	(2) unkind	(3) unkempt	(4) appointed
26. inimitable	(1) matchless	(2) optical	(3) outlined	(4) parental
27. deductive	(1) seductive	(2) productive	(3) reductive	(4) inductive
28. credible	(1) bereft	(2) indelible	(3) plausible	(4) secure
29. essential	(1) classical	(2) ethereal	(3) superflous	(4) disarming
30. discreet	(1) redolent	(2) mauve	(3) imprudent	(4) pertinent
31. original	(1) oral	(2) copied	(3) derelict	(4) centre
32. clumsy	(1) gruesome	(2) boyish	(3) adroit	(4) vapid
33. ecstatic	(1) rapt	(2) dotted	(3) fawning	(4) proper
34. suave	(1) prevalent	(2) neuter	(3) old	(4) brusque
35. effectual	(1) tired	(2) unarmed	(3) wide	(4) adequate
36. obsolete	(1) obtuse	(2) favorable	(3) contemporary	(4) foolish
37. seemly	(1) poetic	(2) scribbled	(3) local	(4) fit
38. demented	(1) grievous	(2) sorry	(3) delinquent	4) mad
39. abysmal	(1) temporal	(2) incidental	(3) impressive	(4) bottomless
40. sparse	(1) expensive	(2) crooked	(3) dense	(4) rural
41. astute	(1) astounding	(2) astringent	(3) shrewd	(4) dramatic
42. sinister	(1) auspicious	(2) settled	(3) diligent	(4) tacit
43. nefarious	(1) wicked	(2) poor	(3) sick	(4) steep
44. canonical	(1) flushed	(2) willful	(3) orthodox	(4) frozen
45. atypical	(1) ordinary	(2) curt	(3) topical	(4) casual
46. benign	(1) democratic	(2) indignant	(3) mottled	(4) kind
47. staid	(1) frivolous	(2) open	(3) tabular	(4) harsh
48. manifest	(1) incessant	(2) evident	(3) manifold	(4) lavish
49. lethal	(1) regal	(2) volatile	(3) arid	(4) deadly
50. autonomous	(1) dependent	(2) delectable	(3) gracious	(4) atrocious

Stop here.

COMPLETION

Practice Problems

Look at the following definition. You are to think of the word that fits the definition.

1. A contest of speed.				
B	F	M	P	R

The word is *race.* The letter *R* is the first letter in the word *race.* In the section of the answer sheet labeled " COMPLETION, Practice Problems, Page 5," the space indicated by *R* in the first row has been blackened[2].

Blacken the space corresponding to the first letter of the word which fits the following definition :

2. A place or building for athletic exercises.				
C	D	G	H	T

The word is *gymnasium.* You should have marked the space indicated by *G* because it is the first letter in the word *gymnasium.*

Do the following examples in the same way :

3. The thin cutting part of an instrument, as of a knife or a sword.				
A	B	D	H	W
4. The wife of a king.				
F	N	P	Q	V
5. A small or portable bed, as of canvas stretched on a frame.				
C	H	N	P	T

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

1948 Edition. Stop here. Wait for the signal.

[2]. Same method as in Same-Opposite test.

COMPLETION

Page 6

Think of the word that fits the definition. Then mark the first letter of that word on the answer sheet

1. A mark remaining after a wound is healed.
F J N S V

2. A long, slender wooden implement for propelling or steering a boat.
A E I O U

3. A song to quiet babies.
D F G K L

4. A feast, often ceremonious and followed by speeches.
A B E H J

5. A public sale of property to the highest bidder.
A C E G R

6. Time that is to come.
B D F G I

7. A keen-edged instrument for shaving.
B D K R T

8. Explanation of the meaning of a word.
A B D F J

9. A professional rider of horses in races.
F G H J K

10. The stick with which the leader of a band, orchestra, etc., beats time.
A B H L Q

11. One who loves his country and zealously supports it.
H K P T W

12. A dealer in meat.
A B F H I

13. The part of day between noon and evening.
A B C E F

14. A small elementary book for teaching children to read.
D F K L P

15. A revision of, or an addition to, a constitution.
A D F T U

16. A sensation of dryness in the mouth and throat, with a craving for liquids.
F M P T V

17. The whole body of salt water which covers nearly three fourths of the surface of the globe.
K N O P T

18. A human being who eats human flesh.
B C D F G

19. A vehicle for taking the sick or injured to a hospital.
A E I O U

20. A stopper for a bottle to prevent the flow of liquid.
C D G H M

21. An ornamental band or chain, worn about the arm.
A B D E F

22. A child in the first period of life.
G H I L M

23. A large, stout cord of twisted or braided strands.
N P R S W

24. A record of daily events, transactions, or personal memoranda.
B C D F G

25. An excavation for obtaining building stone.
J L O Q T

Go to the next page. Do not wait for any signal.

Think of the word that fits the definition. Then mark the first letter of that word on the answer sheet.

26. The artificial watering of farm lands to supply growing crops with moisture.
A E I O U

27. The official residence of a sovereign.
D E J O P

28. A collection of maps in a volume.
A E I O U

29. The yellow mass in the centre of birds' eggs.
A G I R Y

30. Exclusive control of the supply of any commodity or service in a given market.
B D F M N

31. One who enters into, or offers himself for, any service of his own free will.
D J K U V

32. An artificial channel filled with water, for navigation.
A B C E F

33. A recurrence, as of an illness, after improvement.
A D L R T

34. An instrument used for looking out over the water from a submerged submarine.
A G N P W

35. A period of two weeks.
F G N R S

36. The soft tissue which fills the cavities of the bones.
A F K M U

37. A written order directing a bank to pay money.
A C F H K

38. A building having stalls, as for horses.
A D K P S

39. A floating object moored to the bottom to mark a channel, anchor, or rock.
B G I O R

40. The coat of wool that covers a sheep.
D F G K N

41. A book or list containing the names and addresses of the inhabitants of any place.
B D G H Q

42. A three-legged stand, as for a camera.
C H L R T

43. Prolonged inability to obtain due sleep.
G H I J K

44. A sack or pouch for holding something.
B F L N W

45. A mistake or a deviation from that which is right or correct.
C E G O P

Go to the next page. Do not wait for any signal.

Think of the word that fits the definition. Then mark the first letter of that word on the answer sheet.

46. A formal relinquishment of sovereign power.
A G J P Q

47. An edifice for dramatic performances.
D G M T W

48. The natural abode of an animal or plant.
B H I J U

49. A place where a river or other water may be crossed by wading.
A F H N T

50. A utensil with meshes for separating coarse particles from finer ones.
P R S V W

51. One who is inclined to put the least favourable construction upon actions and happenings.
H J P R S

52. A burn or injury to the flesh by hot liquid or steam.
E G N R S

53. A remedy to counteract the effects of poison.
A E I O U

54. A specified or regular course of study.
C M N O T

55. A race or succession of kings of the same line or family.
A D F I O

56. A small shrill flute.
E H J M P

57. The loss of power of voluntary motion or sensation.
B C E O P

58. The flesh of deer.
F G P S V

59. A metal or alloy used to join metallic surfaces.
K P S T W

60. The mass of leafage of a plant as produced in nature.
A E F J R

Stop here.

ARITHMETIC

Practice Problems

In this test you will be given some problems in arithmetic. After each problem there are five answers, but only one of them is the correct answer. You are to solve each problem and blacken the space on the answer sheet which corresponds to the answer you think is correct. The following problem is an example :

1. How many pencils can you buy for 50 cents at the rate of 2 for 5 cents ?
   (a) 10 (b) 20 (c) 25 (d) 100 (e) 125

Find on the answer sheet the space labeled " ARITHMETIC, Practice Problems, Page 9." The correct answer to the problem is 20, which is answer (b).

In the row numbered 1, space (b) has been blackened.

In the *second* row, blacken the space which corresponds to the answer to the second practice problem.

2. If James had 4 times as much money as George, he would have $16. How much money has George ?
   (a) $4 (b) $8 (c) $12 (d) $16 (e) $64

You should have blackened space (a), which corresponds to $4, the correct answer.

Blacken the spaces corresponding to the answers to the following problems:

3. In 5 days Harry has saved a dollar. What has his average daily saving been ?
   (a) 20c (b) $22\frac{1}{2}$c (c) 25c (d) 30c (e) 40c

4. John sold 4 magazines at 5 cents each. He kept $\frac{1}{2}$ the money and with the other $\frac{1}{2}$ he bought papers at 2 cents each. How many did he buy ?
   (a) 3 (b) 4 (c) 5 (d) 6 (e) 10

When the signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly and accurately. Your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

Find the correct answer to each problem below. Then blacken the corresponding space on the answer sheet.

1. Sam had 12 marbles. He found 3 more and then gave 6 to George. How many did Sam have left ?
(a) 3 (b) 6 (c) 9 (d) 12 (e) 15

2. If $3\frac{1}{2}$ tons of coal cost $21, what will $7\frac{1}{2}$ tons cost ?
(a) $9.80 (b) $42 (c) $45 (d) $75 (e) $98

3. A has $320, B has $\frac{1}{4}$ as much as A, and C has $\frac{1}{2}$ as much as A and B together. How much have all together ?
(a) $400 (b) $480 (c) $500 (d) $520 (e) $600

4. Lemons sell at 3 for 10 cents. How much will $1\frac{1}{2}$ dozens cost ?
(a) 30c (b) 40c (c) 45c (d) 50c (e) 60c

5. A quarter ounce of gold is worth $4. How many ounces does $48 worth of gold weigh ?
(a) 2 (b) 3 (c) 4 (d) 8 (e) 16

6. In copy work a typist's average time per page is $3\frac{1}{2}$ minutes. How many pages can she copy in 49 minutes ?
(a) 7 (b) 10 (c) 14 (d) 17 (e) 21

7. If it takes 8 barrels of oil at $1.35 per barrel to sprinkle $\frac{1}{2}$ mile of road, how much will oil cost for 5 miles ?
(a) $27 (b) $54 (c) $81 (d) $90 (e) $108

8. Mary and Helen receive $2.00 for making buttonholes. Mary makes 42, Helen 28. How much should Mary receive ?
(a) $.80 (b) $1.00 (c) $1.20 (d) $1.40 (e) $1.60

9. A grocer bought 160 boxes of berries. From the first 8 boxes examined he had to throw away 1 box. At this rate, how many boxes will he be able to sell ?
(a) 20 (b) 21 (c) 120 (d) 139 (e) 140

10. If coffee loses 20% of its weight in roasting, how many pounds of green coffee must be bought to produce 8 pounds when roasted ?
(a) 10 (b) 12 (c) 16 (d) 18 (e) 20

11. A man owns 2/3 of a boat and sells 3/4 of his share for $750. At this rate, find the value of the boat.
(a) $1,000 (b) $1,125 (c) $1,250 (d) $1,500 (e) $1,750

12. Soldiers march 2 feet 6 inches per step and take 100 steps to the minute. How many feet do they march in 1/12 of an hour ?
(a) 1,000 (b) 1,250 (c) 1,320 (d) 1,500 (e) 1,600

13. One third of an estate went to charity, and one half of the remainder went to each of two children. If each child received $5,000, what was the value of the estate ?
(a) $10,000 (b) $15,000 (c) $17,500 (d) $20,000 (e) $25,000

14. A schoolroom seating 35 pupils has 3 times as many single desk as double desks. How many single desks are there ?
(a) 17 (b) 18 (c) 19 (d) 20 (e) 21

Find the correct answer to each problem below. Then blacken the corresponding space on the answer sheet.

15. A dealer marked goods at $ .60 a yard, but he sold them at a discount of 20% and still made a profit of 20% of the cost. What was the cost of the goods per yard to the dealer ?
(a) $. 25 (b) $.30 (c) $.35 (d) $.40 (e) $.45

16. A newsboy buys equal numbers of two papers. He sells 5/6 of one kind and 7/8 of the other. What fraction of the total number is unsold ?
(a) 1/7 (b) 7/48 (c) 2/7 (d) 1/4 (e) 13/40

17. A square plot would contain 73 square feet more if each side were 1 foot longers How many feet long is a side of the plot ?
(a) 32 (b) 36 (c) 40 (d) 42 (e) 44

18. If the average depth of 3 wells is 68 feet, and no one is less than 64 feet deep, what is the greatest possible depth in feet of one of the three ?
(a) 68 (b) 72 (c) 76 (d) 79 (e) 80

19. Five lamp posts are placed along a street 35 yards apart. How many yards is the first lamp post from the last ?
(a) 95 (b) 140 (c) 175 (d) 420 (e) 525

20. John and Henry start walking to meet one another from places $10\frac{1}{2}$ miles apart. If John walks at the rate of 3 miles an hour, and Henry at the rate of 4 miles an hour, how many hours will it be before they meet ?
(a) $1\frac{1}{2}$ (b) 2 (c) $2\frac{1}{2}$ (d) 3 (e) $3\frac{1}{2}$

Stop here.

NUMBER SERIES

Practice Problems

The numbers in each series below follow some rule. For each series you are to find the *next number*.

In the first series below, each number is 2 larger than the preceding number. The *next number* in the series would be 14. Of the five answers at the right, answer (e) is, therefore, correct. In the section of the answer sheet labeled " NUMBER SERIES, Practice Problems, Page 12," space (e) in the first row has been blackened.

	Series						*Next Number*				
1.	2	4	6	8	10	12	10 (a)	11 (b)	12 (c)	13 (d)	14 (e)

Find the rule in the series below, and blacken one of the answer spaces in the second row on the answer sheet.

2.	20	19	18	17	16	15	10 (a)	12 (b)	14 (c)	15 (d)	16 (e)

Each number in this series is 1 less than the preceding number. You should have blackened space (c), which corresponds to 14, the next number in the series.

Find the rule in the series below, and blacken the space on the answer sheet which corresponds to the next number.

3.	10	8	11	9	12	10	9 (a)	10 (b)	11 (c)	12 (d)	13 (e)

The series above goes by alternate steps of subtracting 2 and adding 3. You should have blackened space (e), which corresponds to 13, the next number.

In each series below, find the rule and blacken the space on the answer sheet which corresponds to the next number. There is a different rule for each series. Go right ahead. Do not wait for any signal.

4.	8	11	14	17	20	23	10 (a)	13 (b)	23 (c)	25 (d)	26 (e)
5.	27	27	23	23	19	19	15 (a)	16 (b)	17 (c)	18 (d)	19 (e)
6.	16	17	19	20	22	23	18 (a)	20 (b)	22 (c)	24 (d)	25 (e)

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the Signal.

1948 Edition.

Find the rule in each problem below and blacken the space which corresponds to the next number.

NUMBER SERIES.

No.								(a)	(b)	(c)	(d)	(e)
1.	14	18	22	26	30	34	38	39	40	41	42	43
2.	8	8	8	7	7	7	6	5	6	7	8	9
3.	1	2	3	4	1	2	3	0	2	3	4	5
4.	6	9	7	10	8	11	9	7	10	12	13	14
5.	21	20	22	20	23	20	24	16	20	24	28	29
6.	10	12	16	18	22	24	28	30	32	34	36	38
7.	8	6	4	12	10	8	16	6	10	12	14	16
8.	90	82	74	66	58	50	42	32	34	36	38	40
9.	15	15	13	10	10	8	5	2	3	4	5	6
10.	6	7	5	8	9	7	10	8	9	10	11	13
11.	5	7	14	16	32	34	68	70	72	74	76	78
12.	72	36	40	20	24	12	16	4	8	12	16	20
13.	3	4	6	9	13	18	24	29	30	31	32	33
14.	5	10	7	14	11	22	19	16	20	24	32	38
15.	76	38	36	18	16	8	6	1	2	3	4	5

No.								(a)	(b)	(c)	(d)	(e)
16.	9	10	8	24	6	7	5	3	6	15	16	20
17.	17	14	7	21	18	9	27	15	21	24	45	81
18.	14	16	13	17	12	18	11	15	16	17	18	19
19.	1	2	5	11	12	15	21	22	24	25	27	30
20.	3	6	5	5	8	7	7	6	7	10	13	14
21.	8	10	12	10	12	14	12	10	12	14	16	18
22.	2	3	5	5	10	11	13	13	15	16	26	28
23.	44	40	42	14	10	12	4	0	2	6	7	10
24.	24	27	9	18	21	7	14	11	17	22	28	33
25.	81	27	54	18	36	12	24	4	8	21	24	48
26.	7	9	12	8	3	9	16	8	9	19	23	24
27.	22	16	11	7	4	2	1	1	2	4	7	11
28.	6	42	7	12	48	16	18	6	18	20	23	24
29.	95	92	46	42	21	16	8	2	4	6	8	10
30.	8	6	12	14	7	5	10	5	6	12	15	20

AMERICAN COUNCIL ON EDUCATION

CO-OPERATIVE ENGLISH TEST.

TEST B1 : EFFECTIVENESS OF EXPRESSION

Please print :

Name..Date ....
Last First Middle.

Grade or Class......................Age ....Date of Birth......
Yrs. Mos.

School .... City....................Sex ....
M. or F.

Title of the English course you are now taking..........Instructor........

General Directions : Do not turn this page until the examiner tells you to do so. This examination consists of three parts, and requires 40 minutes of working time. The directions for each part are printed at the beginning of the part. Read them carefully, and proceed at once to answer the questions. DO NOT SPEND TOO MUCH TIME ON ANY ONE ITEM. ANSWER THE EASIER QUESTIONS FIRST ; then return to the harder ones if you have time. There is a time limit for each part. You are not expected to answer all the questions in any part in the time limit ; but if you should, go on to the next part. If you have not finished Part I when the time is up, stop work on that part and proceed at once to Part II. If you finish the last part before the time is up, you may go back and work on any part. No questions may be asked after the examination has begun. You may answer questions even when you are not perfectly sure that your answers are correct, but you should avoid wild guessing, since wrong answers will result in a subtraction from the number of your correct answers.

Part	Minutes
I. Sentence Structure and Style	15
II. Diction	10
III. Organization	15
Total	40

Scaled Score	Percentile

PART I

SENTENCE STRUCTURE AND STYLE

(15 minutes)

Directions : Different versions of each passage of prose are given in the two columns below. In this part of the test, you will be asked to choose the better version of each section. First, read quickly through Column 1 of the passage to get the meaning of the whole passage. Then read the directions below.

	Column 1		Column 2
A-1	The baron spent the morning putting his affairs in order, for he was uncertain about the outcome of the mission he was to undertake.	**A-2**	The baron put his affairs in order, he spent the morning doing this, and he was uncertain about the outcome of the mission he was to undertake.
B-1	The rounds of the cottages were made, where he collected, from those tenants who were able to pay, the rent.	**B-2**	He made the rounds of the cottages, and collected the rent from those tenants who were able to pay.
C-1	On his return to the castle, he supervised the packing of his valise, making sure that his servant put in everything that would be needed.	**C-2**	He returned to the castle and supervised the packing of his valise and he made sure that his servant put in everything that would be needed.
D-1	Finally, about three o'clock, setting out for Paris. He was determined to lose no time in arriving at the scene of action.	**D-2**	Finally, about three o'clock, he set out for Paris, determined to lose no time in arriving at the scene of action.

Compare the two different versions of each lettered section as given in Columns 1 and 2 above, and answer each of the following questions by putting the *number* of the correct choice in the parentheses at the right.

A. Section **A** is better expressed in
A-1 Column 1.
A-2 Column 2. .. .. .. A( )

B. Section **B** is better expressed in
B-1 Column 1.
B-2 Column 2. .. .. .. B( )

C. Section **C** is better expressed in
C-1 Column 1.
C-2 Column 2. .. .. .. C( )

D. Section **D** is better expressed in
D-1 Column 1.
D-2 Column 2. .. .. .. D( )

Go on to the next page.

Column 1

E-1 The overland approach is still an important element in the overwhelming effect of a first impression of California.

F-1 Since the state was the only world I knew during my childhood, I imagined other states and countries were much like my own surroundings.

G-1 Only after going away and coming back again over my father's route was the warm, colourful force of the beauty of California felt by me:

H-1 We passed dull plains, hot and dry desert; the night was cold in the mountains, and dawn came in the foothills with sunshine in the valley; finally the sunset was seen through the Golden Gate.

I-1 I made the trip comfortably and swiftly by railroad, as my father had plodded and fought that whole long distance in a wagon train.

J-1 He always liked to recall the day they turned over the summit and waded down joyously into the amazing golden sea of sunshine; he often told us, "I saw then that this was the place to live".

Column 2

E-2 The overwhelming effect which is produced by a first impression of California still has as an important element in its impressiveness the overland approach to the state.

F-2 As a child, I imagined that other states and countries were much like my own surroundings, the state was the only world that I knew.

G-2 I never felt the warm, colourful force of the beauty of California until I had gone away and come back over my father's route:

H-2 dull plains; hot, dry desert; the night of icy mountains; the dawning foothills breaking into the full day of sunshine in the valley; and finally, the sunset through the Golden Gate.

I-2 I made the trip by railroad, comfortably and swiftly, but my father had plodded and fought the whole long way in a wagon train.

J-2 He often told us about the day they turned over the summit, with joy they waded down into the amazing golden sea of sunshine, he saw then that this was the place to live, and he always liked to recall that time.

Compare the two different versions of each lettered section as given in Columns 1 and 2 above, and answer each of the following questions by putting the *number* of the correct choice in the parentheses at the right.

E. Section E is better expressed in
E-1 Column 1.
E-2 Column 2. .. .. .. E( )

F. Section F is better expressed in
F-1 Column 1.
F-2 Column 2. .. .. .. F( )

G. Section G is better expressed in
G-1 Column 1.
G-2 Column 2. .. .. .. G( )

H. Section H is better expressed in
H-1 Column 1.
H-2 Column 2. .. .. .. H( )

I. Section I is better expressed in
I-1 Column 1.
I-2 Column 2. .. .. .. I( )

J. Section J is better expressed in
J-1 Column 1.
J-2 Column 2. .. .. .. J( )

Go on to the next page.

Directions : Read each of the following groups carefully ; then decide which one of the four choices in each group is expressed most satisfactorily, and put the number of this best choice in the parentheses at the right of the group.

1–1 Your major interest in modern history is no reason for not studying science, and you should also study literature and languages.

1–2 Although you may be primarily interested in modern history, you should not neglect the study of science, literature, and languages.

1–3 Although you may be interested in modern history is hardly a reason for not studying science as well as literature and languages.

1–4 Being particularly interested in modern history, neverthless you should also study science, literature and languages as well .. 1 ( )

2–1 An electric refrigerator which was bought to replace the old icebox which had stood in the back hall for twenty years was installed in its place.

2–2 The old icebox having stood for twenty years in the back hall, it was replaced by an electric refrigerator which was bought and installed.

2–3 After standing in the back hall for twenty years the old icebox which was replaced by an electric refrigerator.

2–4 An electric refrigerator was bought to replace the old icebox which had stood in the back hall for twenty years .. .. 2 ( )

3–1 The first day they were very active, pottering about with hammer and nails, putting up curtains, and making the house habitable.

3–2 The first day they were very active and put up curtains, pottering about with hammer and nails, the house was made habitable.

3–3 Curtains were put up and the house made habitable and they pottered about with hammer and nails, being very active the first day.

3–4 The first day they were very active and they pottered about with hammer and nails and put up curtains. Making the house habitable .. .. 3 ( )

4–1 At the skiing area near Badger Pass, a new 200-car parking space is under construction by the National Park Service which will double the parking facilities available.

4–2 The new 200-car parking space which is being constructed by the National Park Service which will double the parking facilities available is located at the skiing area near Badger Pass.

4–3 At the skiing area near Badger Pass, the National Park Service is constructing a new 200-car parking space which will double the parking facilities available.

4–4 The National Park Service is constructing a new 200-car parking space at the skiing area near Badger Pass which will double the parking facilities .. .. 4 ( )

Go on to the next page.

PART II
DICTION
(10 minutes)

Directions : In each of the following items, decide which one of the five numbered words or phrases would **most suitably** complete the sentence if inserted in the blank (——). Then put the **number** of the best word or phrase in the parentheses at the right.

1. He asked his science teacher to (——) the difference between ordinary water and heavy water.
1–1 explain
1–2 interpret
1–3 translate
1–4 expound
1–5 diagnose .. .. 1 ( )

2. The new Secretary of State argued that an even larger peace-time army and navy should be (——) if we are to be prepared for international emergencies.
2–1 maintained
2–2 preserved
2–3 upheld
2–4 continued
2–5 strengthened .. .. 2 ( )

3. Upon reading the programme, we discovered that the mile relay and the hurdle races were (——) for Friday and Saturday.
3–1 appointed
3–2 allotted
3–3 registered
3–4 scheduled
3–5 placed.. .. .. 3 ( )

4. The notes of the late doctor are especially (——) since they contain the only reference to the experiment in all the records of the laboratory.
4–1 expressive
4–2 foreboding
4–3 evident
4–4 knowing
4–5 significant .. .. 4 ( )

5. The Cross is the (——) of Christianity.
5–1 symbol
5–2 index
5–3 motto
5–4 characteristic
5–5 token .. .. .. 5 ( )

6. The map did not clearly indicate the (——) of the abandoned gold mine.
6–1 space
6–2 location
6–3 precincts
6–4 area
6–5 environment .. .. 6 ( )

7. They were able to (——) the blaze to the warehouse through the use of fire-fighting chemicals.
7–1 confine
7–2 prohibit
7–3 secure
7–4 restrain
7–5 impede .. .. 7 ( )

8. No (——) charge is made by our firm for monogramming any silver article purchased during the anniversary sale.
8–1 excess
8–2 duplicate
8–3 outside
8–4 unnecessary
8–5 extra .. .. .. 8 ( )

9. De Quincy said that he had (——) the labour of his whole life to the construction of a single work.
9–1 destined
9–2 hallowed
9–3 devoted
9–4 addicted
9–5 inscribed .. .. 9 ( )

10. The Book of Ruth is (——) to be one of the most charming of stories, not only in ancient literature, but in the literature of any time and of any language.
10–1 granted
10–2 assented
10–3 acknowledged
10–4 confessed
10–5 owned .. .. 10 ( )

Go on to the next page.

11. The (——) treatment which the prisoners suffered at the hands of the enemy left them bitter and resentful.
11–1 unfeeling
11–2 heathen
11–3 evil
11–4 inhuman
11–5 malicious .. .. 11 ( )

12. The doctor said there was nothing seriously wrong, but his tone (——) that care should be taken.
12–1 alluded
12–2 predicted
12–3 connoted
12–4 conveyed
12–5 implied .. .. 12 ( )

13. What precautions have been taken (——) the spread of scarlet fever ?
13–1 opposing
13–2 contrary to
13–3 abreast of
13–4 adverse to
13–5 against .. .. 13 ( )

14. A (——) of the principles of arithmetic is necessary for work in algebra or geometry.
14–1 judgment
14–2 knowledge
14–3 learning
14.4 foresight
14–5 wisdom .. .. 14 ( )

15. I would not have recommended him for the job if I had not thought him (——).
15–1 sufficient
15–2 ample
15–3 fitting
15–4 competent
15–5 complete .. .. 15 ( )

16. Through no fault of his own, the youth found himself in (——) which soon proved too great to solve without some guidance from his friends.
16–1 a dilemma
16–2 an argument
16–3 a contention
16–4 a misfortune
16–5 a state .. .. 16 ( )

17. Mary applied for admission to business college on the (——) that she was to be graduated with her class.
17–1 opinion
17–2 idea
17–3 estimation
17–4 conjecture
17–5 assumption .. .. 17 ( )

18. After the first editorial appeared, the (——) against juvenile delinquency gained more supporters than we had hoped for.
18–1 struggle
18–2 revolution
18–3 crusade
18–4 expedition
18–5 conflict .. .. 18 ( )

19. I tried to be (——) in phrasing the delicate question concerning his failure to pay the library fee.
19–1 literal
19–2 particular
19–3 correct
19–4 precise
19–5 fine .. .. .. 19 ( )

20. In this series, the artist has used a (——) of memories of the French towns which he has loved.
20–1 compound
20–2 aggregate
20–3 composite
20–4 mixture
20–5 union .. .. 20 ( )

Go on to the next part.

PART III

ORGANIZATION

(15 minutes)

Directions:—Read each of the following groups of sentences, and decide what would be the **best order** in which to put the sentences, to form a well-organized paragraph. Write the letters of the sentences in this **best order** on a piece of scratch paper. Then answer the questions below each group by putting in the parentheses at the right the number of the best answer, according to the order you have chosen.

Items 1-3 :

A. The flowers then produce seeds.
B. Young plants first develop roots, stems and leaves.
C. Later on, flowers appear on the plant.

1. If the three sentences above were arranged in the best order, Sentence A would be placed.
   1–1 first.
   1–2 directly after B.
   1–3 directly after C. .. 1 ( )
2. Sentence B would be placed
   2–1 first.
   2–2 directly after A.
   2–3 directly after C. .. 2 ( )
3. Sentence C would be placed
   3–1 first.
   3–2 directly after A.
   3–3 directly after B. .. 3 ( )

Items 4-7:

A. Eventually he became a professor and composer of music, writing operas and symphonies around the folklore of the Russian people.
B. As a leader of naval bands he displayed great musical talent.
C. Thus he succeeded in expressing in his music the characteristic rhythms and melancholy themes of the life of the Russian people.
D. Rimski-Korsakov was at one time an admiral in the Russian navy.

4. If the four sentences above were arranged in the best order, Sentence A would be placed
   4–1 first.
   4–2 directly after B.
   4–3 directly after C.
   4–4 directly after D. .. 4 ( )
5. Sentence B would be placed
   5–1 first.
   5–2 directly after A.
   5–3 directly after C.
   5–4 directly after D. .. 5 ( )
6. Sentence C would be placed
   6–1 first
   6–2 directly after A.
   6–3 directly after B.
   6–4 directly after D. .. 6 ( )
7. Sentence D would be placed
   7–1 first.
   7–2 directly after A.
   7–3 directly after B.
   7–4 directly after C. .. 7 ( )

Items 8-11 :

A. Once it fell, there was no reason why a new one shouldn't rise in its place and use the traditional name.
B. For a generation it was both a social centre of the West and a symbol of its vast and easy riches.
C. The original Palace Hotel was as much an institution and a monument as it was a place to sleep and dine.
D. But to recapture the original spirit was impossible.

8. If the four sentences above were arranged in the best order, Sentence A would be placed
   8–1 first.
   8–2 directly after B.
   8–3 directly after C.
   8–4 directly after D. .. 8 ( )
9. Sentence B would be placed
   9–1 first.
   9–2 directly after A.
   9–3 directly after C.
   9–4 directly after D. .. 9 ( )
10. Sentence C would be placed
    10–1 first.
    10–2 directly after A.
    10–3 directly after B.
    10–4 directly after D. .. 10 ( )
11. Sentence D would be placed
    11–1 first.
    11–2 directly after A.
    11–3 directly after B.
    11–4 directly after C. .. 11 ( )

Go on to the next page.

Items 12-16 :

Directions : Each of the lettered statements below summarizes a paragraph in a story. Decide what would be the best order in which to arrange the paragraphs represented by the statements. Write the letters of the statements in this best order on a piece of scratch paper. Then answer the questions below the statements by putting in the parentheses at the right the number of the best answer, according to the order you have chosen.

A. When a coast guard notified us that an unusually high wind and tide were expected, we packed our equipment and started for a nearby village.

B. We had travelled only a few hundred yards when we came to a tree which had fallen right across our way.

C. We arrived at our destination just as the hurricane reached its height, making entirely impassable the road we had just traversed.

D. At the time of the New England hurricane my family and I were camping in a trailer park on the southern shore of Cape Cod.

E. In order to go on, we had to chop through the trunk of the tree. We finally succeeded in disposing of the obstacle and proceeded on our way.

12. The paragraph developing A would be placed
12-1 first.
12-2 directly after B.
12-3 directly after C.
12-4 directly after D.
12-5 directly after E. .. 12 ( )

13. The paragraph developing B would be placed
13-1 first.
13-2 directly after A.
13-3 directly after C.
13-4 directly after D.
13-5 directly after E. .. 13 ( )

14. The paragraph developing C would be placed
14-1 first.
14-2 directly after A.
14-3 directly after B.
14-4 directly after D.
14-5 directly after E. .. 14 ( )

15. The paragraph developing D would be placed
15-1 first.
15-2 directly after A.
15-3 directly after B.
15-4 directly after C.
15-5 directly after E. .. 15 ( )

Items 12-16—*contd.*

16. The paragraph developing E would be placed
16-1 first.
16-2 directly after A.
16-3 directly after B.
16-4 directly after C.
16-5 directly after D. .. 16 ( )

Items 17-20

Directions : In the outline below, certain headings have been omitted. These omissions are indicated by the numbers 17, 18, etc. First read through the outline ; then answer the questions below by putting the number of the correct choice in the parentheses at the right.

How to Roast a Turkey

I. (——17——)
  A. Cleaning the Turkey
    1. (——18——)
    2. Removing Pinfeathers
  B. (——19——)

II. The Roasting Process
  A. (——20——)
  B. Length of Roasting Time

- - - - - - - - - - -

17. In filling in the incomplete outline above, which one of the following topics would you use for the main heading I ?
17-1 Stuffing the Turkey
17-2 Preparation for Roasting
17-3 Degree of Heat to Use
17-4 Size of Turkey
17-5 Rinsing Inside of Turkey 17 ( )

18. Which one of the following topics would you use for 1 under I-A ?
18-1 Cleaning the Turkey
18-2 Stuffing the Turkey
18-3 Rinsing Inside of Turkey
18-4 Preparation for Roasting
18-5 Making the Stuffing .. 18 ( )

19. Which one of the following topics would you use for I-B ?
19-1 Table Decorations
19-2 Rinsing Inside of Turkey
19-3 Preparation for Roasting
19-4 Placing in Oven
19-5 Stuffing the Turkey .. 19 ( )

Go on to the next page.

Items 17-20—*contd.*

20. Which one of the following topics would you use for **II-A**?
20-1 How to Carve
20-2 Degree of Heat to Use
20-3 Making the Stuffing
20-4 Preparation for Roasting
20-5 Putting Stuffing in Turkey 20 ( )

Items 21-30

Directions : Most of the statements in items 21-30 could be used in a composition about **a new type of bus which is being tried out by a city transportation system.** The outline for this composition might have the following main divisions :

Topic I : How the new bus is to be tried out

Topic II : What the new bus is like

Topic III : Why the new bus is to be tried out

Read each item and decide which one of the five numbered choices below the statement is correct ; then put the number of your choice in the parentheses at the right.

21. The new bus is supported on three axles.
This statement
21-1 belongs to **Topic I.**
21-2 belongs to **Topic II.**
21-3 belongs to **Topic III.**
21-4 does **not** belong to any of these topics .. 21 ( )

22. During the trial, the bus will run from 7 to 11 a.m., and from 2 p.m. to 1 a.m.
This statement
22-1 belongs to **Topic I.**
22-2 belongs to **Topic II.**
22-3 belongs to **Topic III.**
22-4 does **not** belong to any of these topics .. 22 ( )

23. The trial operation will aid the Board of Transportation in choosing the type of bus to be used in replacing the street cars.
This statement
23-1 belongs to **Topic I.**
23-2 belongs to **Topic II.**
23-3 belongs to **Topic III.**
23-4 does **not** belong to any of these topics .. 23 ( )

Items 21-30—*contd.*

24. Just back of the centre of the bus there is a rubber section designed to absorb jolts.
This statement
24-1 belongs to **Topic I.**
24-2 belongs to **Topic II.**
24-3 belongs to **Topic III.**
24-4 does not belong to any of these topics .. 24 ( )

25. The Board of Transportation begins today the test operation of a new type of bus.
This statement
25-1 belongs to **Topic I.**
25-2 belongs to **Topic II.**
25-3 belongs to **Topic III.**
25-4 does not belong to any of these topics. .. 25 ( )

26. The new bus is the longest and roomiest of all the buses on the local lines.
This statement
26-1 belongs to **Topic I.**
26-2 belongs to **Topic II.**
26-3 belongs to **Topic III.**
26-4 does **not** belong to any of these topics .. 26 ( )

27. The new bus will be tried out on the Hamilton Parkway line.
This statement.
27-1 belongs to **Topic I.**
27-2 belongs to **Topic II.**
27-3 belongs to **Topic III.**
27-4 does **not** belong to any of these topics .. 27 ( )

28. Front and rear wheels are controlled by a single steering mechanism, so that the bus can turn sharp corners easily.
This statement
28-1 belongs to **Topic I.**
28-2 belongs to **Topic II.**
28-3 belongs to **Topic III.**
28-4 does **not** belong to any of these topics .. 28 ( )

Items 21-30—*contd.*

29. The Board's engineers are interested in determining whether or not such long buses can be safely operated by a one-man crew.

This statement

29-1 belongs to **Topic I.**

29-2 belongs to **Topic II.**

29-3 belongs to **Topic III.**

29-4 does not belong to any of these topics .. 29 ( )

Items 21-30—*concld.*

30. Which one of the statements given in items 21-30 would it be best to use as the **first sentence** in the composition ?

30-1 Statement in item **21**

30-2 Statement in item **23**

30-3 Statement in item **25**

30-4 Statement in item **27** .. 30 ( )

There are three other tests, similar to the above in this battery, Mathematics, Social Sciences and Natural Sciences.

Objective Examinations are marked or scored by machines. The following is a sample part of an answer sheet. All questions are answered by a single pencil mark.

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Same-Opposite Practice Problems Page 3.

	1	2	3	4
1	::	■	::	::
2	::	::	::	::
3	::	::	::	::
4	::	::	::	::
5	::	::	::	::

	1	2	3	4
14	::	::	::	::
15	::	::	::	::
16	::	::	::	::
17	::	::	::	::
18	::	::	::	::
19	::	::	::	::
20	::	::	::	::
21	::	::	::	::
22	::	::	::	::
23	::	::	::	::
24	::	::	::	::
25	::	::	::	::

APPENDIX N*

Budget Estimates of Universities

AGRA UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other Funds	Total	Percentage of Government Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47	40,000	3,18,088	..	43,619	4,01,707	9 96
1947-48	70,140	3,42,766	..	13,359	4,26,265	16·45
1948-49 Estimate ..	84,000*	3,88,600	..	58,582	5,31,182	15·8

* Includes Rs. 35,000 for extension of buildings.

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	..	82,174	2,77,625		3,59,799	+41,909
1947-48	..	99,034	3,40,671	10,000	4,49,705	—23,440
1948-49 Estimate ..	..	87,375	4,46,016		5,33,391	—2,209

ALIGARH UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	5,59,665	2,52,220	2,71,636	4,83,934	15,67,455	35·7	
1947-48 ..	7,77,892	3,21,286	9,213	3,71,971	14,80,362	52·5	
1948-49 .. Estimate	7,48,000	3,83,153	3,350	3,04,522	14,39,025	52·0	

* The figures in this appendix have been supplied by the Statistical Section of the Ministry of Education.

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	6,32,661	1,64,353	6,71,834	1,01,639	15,70,487	—3,032	
1947-48 ..	6,45,104	2,30,279	7,52,354	1,65,325	17,93,062	—3,12,700	
1948-49 .. Estimate	7,55,878	2,34,657	8,01,984	55,950	18,48,469	—4,09,444	

ALLAHABAD UNIVERSITY

Yearly Income—1946-1949

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47	7,92,624	4,99,110	..	2,06,953	14,98,687	52·88
1947-48	20,14,400	6,89,618	..	71,179	27,75,197	72·58
1948-49 Estimate ..	7,91,300	6,43,930	..	15,21,551	29,56,781	26·8

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	10,17,745	1,08,659	4,76,569	69,385	16,72,358	—1,73,671
1947-48	9,24,979	2,30,578	5,70,994	70,101	17,96,652	+9,78,545
1948-49 Estimate	11,74,090	1,40,390	6,77,011	1,60,960	21,52,451	+8,04,330

ANDHRA UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	3,07,000	10,70,308	28,020	1,00,000	15,05,328	20·4	
1947-48 ..	7,52,000	6,66,862	38,191	5,36,536	19,93,589	37·7	
1948-49 .. (Estimate)	4,22,000	8,61,590	75,463	12,68,575	26,27,628	16·1	

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	3.34,451	69,062	7,09,363	23,248	11,36,124	+3,69,204	
1947-48 ..	3,31,038	2,02,394	9,55,978	2,38,113	17,27,523	+2,66,066	
1948-49 .. (Estimate)	3,42,180	2,01,455	13,80,925	4,45,153	23,69,713	+2,57,915	

ANNAMALAI UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47	6,12,000	2,90,580	2,83,720	98,630	12,84,930	47·62
1947-48	9,16,451	2,95,053	2,44,764	1,20,883	15,77,151	58·10
1948-49 .. .. (Estimate)	5,02,000	3,00,645	2,45,800	90,815	11,39,260	44·1

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	2,20,535	1,28,089	4,38,456	4,96,250	12,83,330	+1,600
1947-48	2,23,644	1,23,605	8,14,561	4,15,341	15,77,151	*Nil*
1948-49 .. .. (Estimate)	1,83,405	64,950	6,06,815	2,61,076	11,16,246	+23,014

BANARAS UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	12,70,168	7,81,484	1,79,633	1,15,02,373	1,37,33,658	9·2	
1947-48 ..	21,11,919	9,35,228	13,22,147	41,76,861	85,46,155	24·7	
1948-49 .. (Estimate)	5,08,450	10,09,165	7,476	9,78,505	25,03,596	20·3	

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.		Rs.	Rs.	Rs.	Rs.	
1946-47 ..	14,44,714		25,11,699	86,23,467	1,25,79,880	+11,53,778	
1947-48 ..	17,50,171		49,65,690	9,21,956	76,37,817	+9,08,338	
1948-49 .. (Estimate)	26,15,568		15,94,405	26,20,790	68,30,763	—43,27,167	

BOMBAY UNIVERSITY

Yearly Income—1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	2,09,063	19,41,698	67,287	2,18,672	24,36,720	8·6	
1947-48 ..	3,53,181	23,86,393	3,45,758	6,53,972	37,39,304	9·4	
1948-49 .. (Estimate)	3,37,277	24,72,700	84,544	1,77,154	30,71,675	11·0	

Yearly Expenditure—1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	2,41,875	2,61,061	21,75,765	16,395	26,95,096	—2,58,376	
1947-48 ..	2,87,545	2,48,718	25,83,152	1,96,250	33,15,665	+4,23,639	
1948-49 .. (Estimate)	2,81,765	3,06,154	24,87,657	1,000	30,76,576	—4,901	

CALCUTTA UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	9,38,194	25,60,213	86,830	5,18,691	41,03,928	22·9	
1947-48 ..	8,27,112*	20,90,155	1,65,783	8,03,396	38,86,446	21·3	
1948-49 .. (Estimate)	17,85,500	34,17,111	1,90,852	3,70,400	57,63,863	31·0	

* Excludes the sums of Rs. 8,94,280 and Rs. 2,19,459 as grants from Central Government and other bodies given to the University for specific purposes.

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	10,89,132	6,50,269	16,02,290	5,80,583	39,22,274	+1,81,654	
1947-48 ..	12,87,221	12,81,267	21,26,460	96,133	47,91,081*	—9,04,635	
1948-49 .. (Estimate)	15,05,160	12,09,653	53,77,111	8,78,300	89,70,224	—32,06,361	

* Excludes the sums of Rs. 4,19,332 and Rs. 88,405 on purposes specified by the Central Government and other bodies.

DELHI UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	5,92,398	3,14,190	..	2,23,928	11,30,516	52·4	
1947-48 ..	7,30,013	3,28,780	..	34,450	10,93,243	66·7	
1948-49 .. (Estimate)	8,26,927	2,91,950	..	35,300	11,54,177	71·6	

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.		Rs.	Rs.	
1946-47 ..	1,87,501	51,932	7,37,552		9,76,985	+1,53,531	
1947-48 ..	2,63,800	61,000	7,59,575		10,84,375	+8,868	
1948-49 .. (Estimate)	3,81,500	72,500	7,24,800		11,78,800	—24,623	

EAST PUNJAB UNIVERSITY

Yearly Income, 1947-1949

Year	Government Grant	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grant to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1st October 1947 to 31st March 1948	11,76,570	2,90,934	11,76,570	6,953	26,51,027	44.38
1st April 1948 to 31st March 1949 (Estimate)	3,00,000	21,08,440	..	68,500	24,76,940	12·1

Yearly Expenditure, 1947-1949

Year	Salaries of the teaching staff	Salaries of the Administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.		Rs.		Rs.	Rs.
1st October 1947 to 31st March 1948.	1,52,708		5,41,005	..	6,93,713	+19,57,314
1st April 1948 to 31st March 1949 (Estimate)	5,26,641	2,68,574	21,73,526		29,68,741	—4,91,801

GAUHATI UNIVERSITY

Income 1947-1949

Year	Government Grants	†Fees	Endowments	Donations and other Sources	Total	Percentage of Govt. Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1947-48	*16,00,000	1,40,102	..	2,213	17,42,315	92·8
1948-49 .. .. (Estimate)	5,00,000	1,90,842	..	29,385	7,20,227	69·2

* Includes a non-recurrent grant of Rs. 11,00,000 for permanent buildings.
† Includes Hostel fees.

Expenditure, 947-1949

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	If running at a deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	
1947-48 ..	..	..	..	..	..	Balance to be taken over to next year Rs. 22,76,377.
1948-49 .. (Estimate)	2,14,478	78,093	3,78,719	3,39,158	10,10,448	Including last year's balance, the excess of income over expenditure Rs. 19,86,156 which will be used for permanent buildings next year.

LUCKNOW UNIVERSITY

Yearly Income, 1946-1949

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Govt. Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	%
1946-47	10,77,181	6,10,232	..	3,33,144	20,20,557	53·31
1947-48	12,68,657	10,26,180	..		22,94,837	55·28
1948-49 (Estimate) ..	18,93,090	8,63,500	2,650	6,07,932	33,67,172	56·2

LUCKNOW UNIVERSITY

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the adminis-trative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	11,56,822	4,15,836	5,02,851	1,47,867	22,23,376	—2,02,819
1947-48	12,79,914	3,75,839	8,05,674	78,668	25,40,095	—2,45,258
1948-49 .. .. (Estimate)	12,48,823	4,53,622	8,69,283	13,65,325	39,37,053	—5,69,881

MADRAS UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endow-ments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	4,60,000	9,69,763	27,542	5,08,390	19,65,695	23·4	
1947-48 ..	6,20,000	11,82,709	29,938	4,56,186	22,88,833	27·1	
1948-49 .. (Estimate)	8,10,000	11,78,700	30,000	3,82,170	24,00,870	33·7	

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administra-tive staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	2,67,189	2,61,914	9,13,420	2,07,864	16,50,387	+3,15,308	
1947-48 ..	2,42,390	3,19,111	11,32,911	1,42,838	18,37,250	+4,51,583	
1948 49 .. (Estimate)	3,02,316	3,04,204	12,03,784	6,27,000	24,37,304	—36,434	

MYSORE UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	17,00,000	7,00,790	20,128	35,450	24,56,368	69·2	
1947-48 ..	22,76,000	6,88,452	45,374	1,75,506	31,85,332	71·4	
1948-49 .. (Estimate)	34,46,000	8,63,000	31,200	60,000	44,00,200	78·3	

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	10,33,576	3,50,891	11,63,925	..	25,48,392	—92,024	
1947-48 ..	13,49,857	3,52,260	12,15,035	2,68,180	31,85,332	*Nil*	
1948-49 .. (Estimate)	14,32,613	37,070	19,07,334	14,24,128	48,01,145	—4,00,945	

NAGPUR UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	1,13,300	3,36,241	1,67,089	1,17,340	7,33,970	15·4	
1947-48 ..	1,89,442	3,77,735	..	46,340	6,13,517	30·9	
1948-49 .. (Estimate)	1,86,537	3,25,685	..	10,40,560	15,52,782 O. B. 54,86,436	12·0	
					70,39,218		

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	1,05,149	1,27,200	2,95,160	1,50,609	6,78,118	+55,852	
1947-48 ..	85,957	1,21,976	3,74,480	..	5,82,413	+31,104	
1948-49 .. (Estimate)	1,19,120	40,955	6,07,235	7,78,260	15,45,570	+7,212	

OSMANIA UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	34,98,342	3,33,220	..	..	38,31,562	91·3	
1947-48 ..	62,63,948	6,10,669	34,089	..	69,08,706	90·7	
1948-49 .. (Estimate)	22,09,227*	3,00,551	34,089	..	25,43,867	86·8	

*Includes non-recurring grant of Rs. 5,57,140.

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	23,53,529	1,84,194	9,54,619	..	34,92,342	+3,39,220	
1947-48 ..	41,06,953		5,96,453	6,89,239	53,92,645	+15,16,061	
1948-49 .. (Estimate)	14,45,127	3,72,403	4,49,558	1,80,424	24,47,512	+96,355	

PATNA UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	60,682	7,82,815	..	..	8,43,497	7·2	
1947-48 ..	79,750	12,34,523	..	..	13,14,273	6·1	
1948-49 .. (Estimate)	1,04,990	12,38,118	600	1,13,695	14,57,403	7·2	

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	..	65,430	7,94,568	3,629	8,63,627	—20,130	
1947-48 ..	..	85,699	11,96,593	..	12,82,292	+31,981	
1948-49 .. (Estimate)	63,425	92,584	12,35,818	15,903	14,07,730	+49,673	

RAJPUTANA UNIVERSITY

Yearly Income, 1947-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Govt. Grants to the total.
	Rs.	Rs.	Rs.	Rs.	Rs.	%
July 1947 to June 1948	2,15,500	1,98,183	..	32,060	4,45,743	48·23
July 1948 to Dec. 1948	2,65,500	2,15,100	1,000	16,172	4,97,772	53·3
July 1949 to Dec. 1949 (Estimate)	2,65,500	2,15,400	..	16,050	4,96,950	53·4

Yearly Expenditure, 1947-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
July 1947 to June 1948.	..	55,124	1,79,033	..	2,34,157	+2,11,586.
July 1948 to Dec. 1948 (Estimate).	5,000	39,578	2,87,819	16,749	3,49,146	Closing balance Rs. 1,48,626.
Jan. 1949 to Dec. 1949 (Estimate).	5,000	91,400	3,91,910	1,40,850	6,29,160	After adding last closing balances, there is a balance of Rs. 2,28,002.

SAUGOR UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	%
1946-47	1,00,000	41,339	11,712	1,46,378	2,99,429	33·39
1947-48	7,88,563	1,70,446	64,482	7,04,009	17,27,500	45·64
1948-49 .. .. (Estimate)	*19,75,862	2,34,944	..	4,42,041	26,52,847	74·5

* Includes Rs. 3,00,000 for maintenance and Rs. 1,37,112 for Agriculture College.

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	56,104	19,377	67,857	1,30,659	2,73,997	+25,432
1947-48	1,96,599	49,073	12,00,183	2,92,805	17,38,660	—11,160
1948-49 .. .. (Estimate)	2,23,485	78,226	6,13,910	23,89,750	33,05,371	—6,52,524

TRAVANCORE UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.		
1946-47 ..	22,26,000	2,43,740	22,182	3,39,678	28,31,600	78·6	
1947-48 ..	34,00,000	7,50,582	..	11,188	41,61,770	81·7	
1948-49 .. (Estimate)	22,00,000	5,03,800	..	30,550	27,34,350	80·5	

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the administrative staff	Other recurring expenses	Non-recurring expenses	Total	Surplus	Remarks
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47 ..	5,46,625	5,45,401	14,76,102	3,961	25,72,089	+2,59,511	
1947-48 ..	6,89,201	4,17,463	10,86,695	7,52,954	29,46,313	+12,15,457	
1948-49 .. (Estimate)	8,43,908	7,27,252	9,30,736	2,32,222	27,34,118	+232	

UTKAL UNIVERSITY

Yearly Income, 1946-49

Year	Government Grants	Fees	Endowments	Donations and other sources	Total	Percentage of Government Grants to the total
	Rs.	Rs.	Rs.	Rs.	Rs.	
1946-47	40,000	1,68,894	16,790	1,90,429	4,16,113	9·61
1947-48	61,194	2,33,947	101	63,818	3,59,060	17·04
1948-49 .. .. (Estimate)	20,000	2,18,620	..	1,02,660	3,41,280	5·9

Yearly Expenditure, 1946-49

Year	Salaries of the teaching staff	Salaries of the adminis-trative staff	Other recurring expenses	Non-re-curring expenses	Total	Surplus
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1946-47	..	30,070	2,05,289	..	2,35,359	+1,80,754
1947-48	..	32,828	3,03,246	..	3,36,074	+22,986
1948-49 .. .. (Estimate)	..	42,005	4,14,788	..	4,56,793	—1,15,513

APPENDIX O

TABLE SHOWING TOTAL YEARLY EXPENDITURE OF GOVERNMENT AND AMOUNT SPENT ON EDUCATION (TOTAL) AND ON UNIVERSITY EDUCATION

Government, Central, Provincial or State	Year	Total Expenditure of Government	Total Expenditure on Education	Expenditure on University Education	Remarks
		Rs.	Rs.	Rs.	
Central Govt.* ..	1946-47	4,01,35,61,000	2,60,85,990	13,08,421	
	1947-48†	2,04,83,56,000	3,81,84,608	46,70,252	
	1948-49†	3,82,19,04,000	4,47,88,645	46,01,572	
Assam ..	1946-47 A	5,69,57,000	73,95,439	7,91,702	
	1947-48 A	6,84,79,000	77,67,925	12,32,622	
	1948-49 B	8,21,67,000	86,69,600	12,90,022	
Bihar ..	1946-47	14,41,52,000	1,06,48,873	13,60,143	
	1947-48 A	16,79,98,000	1,24,09,279	14,16,832	
	1948-49 R	22,79,53,000	1,20,11,577	14,59,294	
Bombay ..	1946-47	36,41,55,193	4,52,03,488	27,67,580	
	1947-48	41,32,69,911	6,19,06,994	36,36,775	
	1948-49 R‡	51,91,44,000	8,37,43,000	69,04,615	
C. P. & Berar ..	1946-47	11,54,77,000	1,21,87,000	25,96,000	
	1947-48 A	11,35,90,000	1,83,92,000	31,80,000	
	1948-49 R	17,27,22,000	2,38,06,000	39,84,000	
East Punjab ..	1947-48 A	7,58,46,000	86,55,000	8,72,229	
	1948-49 R	17,82,25,000	1,35,92,000	14,79,268	
Madras ..	1946-47 A	56,98,89,000	5,89,69,565	55,95,967	
	1947-48 A	50,68,56,000	7,03,36,214	67,03,185	
	1948-49 R	57,04,60,700	8,86,62,600	96,50,100	
	1949-50 B	55,66,08,400	9,38,93,200	..	
Orissa ..	1946-47 A	4,48,93,317	63,14,885	9,75,042	
	1947-48 A	5,84,44,820	78,23,117	13,70,474	
	1948-49 R	7,90,35,000	96,53,000	16,12,563	
United Provinces‡	1946-47 A	..	..	..	
	1947-48 A	38,72,96,107	4,09,67,258	35,02,020	
	1948-49 R	48,47,41,700	5,41,63,700	46,30,400	
West Bengal ..	1946-47	52,01,49,000	3,30,30,000	52,01,490	Pre-partition 7½ months.
	1947-48	14,80,21,000	1,30,91,000	19,24,270	
	1948-49	30,82,00,000	2,52,94,000	30,82,000	
**		**	**	**	
Tripura, Manipur, & Cooch-Behar	1946-47	1,55,73,643	9,08,108	..	
	1947-48	1,86,56,665	12,23,150	..	
	1948-49	1,92,99,325	18,03,451	..	
Baroda ..	1946-47	4,54,46,038	50,48,296	5,45,353	
	1947-48	8,78,61,944	69,34,864	7,02,896	
	1948-49	6,32,10,000	88,48,624	6,95,310	

* Supplied by the Statistical Section of the Ministry of Education.

† Figures of expenditure incurred by the Ministry of Relief and Rehabilitation are not available.

‡ Supplied by "Eastern Economist".

State	Year	Total Expenditure of Government	Total Expenditure on Education	Expenditure on University Education	Remarks
Bhopal ..	1946-47	1,34,96,174	6,08,843	2,06,491	
	1947-48	1,29,92,836	6,62,474	2,27,375	
	1948-49	1,40,14,492	6,73,730	2,24,232	
Bikaner ..	1946-47	3,53,73,422	13,06,218	4,95,228	
	1947-48	4,03,21,736	19,07,472	6,04,826	
	1948-49	4,00,46,207	23,58,654	8,81,017	
Cochin and Travancore.	1946-47	12,64,01,218	1,66,29,539	31,22,785	
	1947-48	14,73,13,266	2,08,58,023	41,20,795	
	1948-49	13,21,44,221	2,42,61,515	47,46,617	
Himachal Pradesh	1946-47	1,20,96,800	4,92,500	..	
	1947-48	1,30,40,300	6,79,300	..	
	1948-49	1,19,04,400	8,69,100	33,332	
Hyderabad* ..	1946-47	16,96,38,557	2,58,64,901	47,89,872	
	1947-48	22,91,17,714	2,98,70,828	59,93,905	
	1948-49	22,30,24,286	2,93,40,601	38,02,286	
Jaipur ..	1946-47	3,22,03,000	23,87,000	3,74,000	
	1947-48	3,03,00,000	30,41,000	6,39,000	
	1948-49	4,00,56,000	32,93,000	5,95,000	
Jammu and Kashmir*	1946-47	5,37,81,000	37,51,000	3,67,444	
	1947-48	5,92,88,000	33,49,000	3,77,300	
	1948-49	4,99,60,000	43,11,000	4,43,100	
Kolhapur ..	1946-47	1,38,42,581	19,02,494	3,32,222	
	1947-48	1,78,67,800	19,84,000	3,57,356	
	1948-49	1,41,68,600	19,91,900	3,68,384	
Kutch ..	1946-47	76,46,160	3,02,134	7,646	
	1947-48	77,47,897	3,05,800	7,748	
	1948-49	89,58,880	4,11,670	8,959	
Mysore ..	1946-47	11,74,88,551	1,30,84,492	17,03,584	
	1947-48	10,13,18,999	1,64,37,380	19,95,984	
	1948-49	11,37,59,000	2,75,12,000	34,46,989	
Patiala & East Punjab States Union.	1946-47	5,27,47,243	23,40,447	5,51,839	
	1947-48	5,69,30,054	23,98,933	6,07,079	
	1948-49	5,96,07,627	27,78,628	6,94,982	
Rampur ..	1946-47	89,88,678	8,31,267	..	
	1947-48	1,09,16,772	10,89,104	..	
	1948-49	1,05,71,894	10,36,775	..	
Tehri Garhwal ..	1946-47	31,11,955	91,357	30,808	
	1947-48	38,88,737	1,76,168	55,609	
	1948-49	53,64,116	5,45,487	29,985	

*Budget figures.

APPENDIX P

I. The Danish People's College[1] and Danish Agricultural Education

1. *Origin of the Danish People's College Movement.*—A description of the Danish People's College is appropriate to a study of Indian Universities. The conditions under which it came into being are strikingly similar to those in India in the recent past. The manner in which the originator of the People's College programme promoted his ideas, and the ideas themselves, are strikingly similar to those of Gandhiji and his Basic Education.

The People's College movement has been a major influence in raising Denmark from a very low condition to become the second state in Europe in per capita wealth, though there is scarcely a nation in Europe with less natural resources. The "peasant" rural class has become the leading social force in the country. The social legislation it has brought about is cautiously, though strongly, progressive.

Nicolai F. S. Grundtvig, father of the People's College idea, was born in 1783, and died in 1872. He began promoting his ideas of the People's College in 1838, in much the same way as Gandhiji presented the Basic Education idea just a century later. While neighbouring European countries were gaining strength and prestige, Denmark had been falling back. The country was sunk in illiteracy and poverty, and there was general disillusionment, pessimism and frustration.

Culturally the Danes had lost their bearing. Everything foreign was in high favour. The native language was being displaced by that of the nation which had recently defeated Denmark. Defeated in war, in 1813 the nation was officially declared bankrupt. Norway seceded, after 400 years of union. Educated Danes were completely under the influence of foreign scholarship. Instead of being aroused by these conditions, the Danish people sank into hopeless apathy, expecting national extinction.

It was in such an atmosphere that Grundtvig, at the age of 47, began to travel over rural Denmark, somewhat as Gandhiji did later over India, arousing men and women to the importance of education for the common people, and to love of the fatherland and loyalty to it.

Witnin a few years there was a strong movement in favour of his ideas. However, thirteen years passed before the first People's College was established.

2. *People's College Principles.*—Grundtvig held that the prevailing higher education had given young people undefined impressions of a culture foreign to them, and had taught them to neglect their own. He observed that the prevailing higher education rested on a system of examinations which students were

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1. This description is largely paraphrased from "The People's College", by Holm-Jensen, "The Danish People's High School", by Hegland, and "The Folk High School" by A. H. Hollman.

The term "Folkehojskole" is more accurately translated "People's College" than "Folk High School."

glad to take in the hope of "an assured livelihood" in government service. He saw little love of culture for its own sake. "There had resulted a caste of the educated, and the masses of the country were left in ignorance to slave for them". This type of education, he thought, was not valuable to society, or even to the few who had attained it. He said that constantly poring over books developed an unlovely book-worm type. They were mentally sterile. The students learned to look with disgust upon entering ordinary occupations.

He wrote, "The only good school to train a boy for life is the home of an able, industrious man where a boy can learn to know and also to enjoy the work to which he will afterward devote himself. To lock him up in what amounts to a scholastic reformatory spoils him for a simple life of industry". "It will not do", he wrote, "to have the whole population become professors, state officials or paupers, unless it be that they can literally live on air". At that time a University degree was required for most government appointments. It was largely that requirement which kept the Universities alive.

Grundtvig came to believe that a national awakening must begin with a spiritual enlightenment of the common people. The mother tongue, he believed, should be a ruling factor, and the fatherland the living centre to which all hearts must be drawn.

He began with great faith in books. But he found that the books he wrote did not change the people's lives. His years spent in writing books seemed to him wasted. So he turned to what he called "the living word". He would have his teachers live with the students, talking with them and being examples to them. He sought a relation similar to that of the old Indian *guru* with his pupils. He himself went about rural Denmark, meeting and talking with people face to face. He said, "Great teaching must be the fruit of actual experience on the part of the teacher, not the expression of mere theory".

The aim of his People's College, he held, "should not be examinations and an assured livelihood, but for each individual the development and enlightenment which bring their own reward. The aim of the school should be to find 'the common universal subjects' to which the students would want to devote their time because of their usefulness, or because of the pleasure they give".

Grundtvig insisted that there should be no examinations of any kind in the People's College. They were to teach only things which are of common interest to the whole people.

The study of the mother tongue and all that pertains to it he deemed of prime importance. This emphasis did not result in insularity. An observer wrote, "Foreigners are surprised when they learn that simple peasants are leaders in Parliament, and in important government departments."

Grundtvig held that the difference between the cultured and the uncultured person is that the former feels a sense of kinship with the intellectual life of the past which the latter is without.

The first People's College was established by Kristen Kolb, son of a shoemaker and a follower of Grundtvig, in 1851. It was started with a capital of less than Rs. 2,000, and with 15 students. He built a building for the school,

mostly with his own hands. His little peasant school seemed insignificant, but " history makes no mistake when it attributes to it a decisive influence on the People's College ", and a powerful influence in regeneration of Denmark. By his strong personality the People's College was given a solid footing in Denmark. Grundtvig said Kolb had transformed his ideas into reality in the best manner.

Kolb said, " I do not know so much about enlightenment as about enlivenment. I enliven first and enlighten afterward, or at least enliven and enlighten at the same time ". Following his example, all the People's Colleges came to put their chief emphasis on the awakening and development of personality; imparting knowledge was treated as of secondary importance. He said, I found that not until the enthusiasm of my students was aroused were they ready for any instruction.

3. *Description of the People's College.*—The People's Colleges of Denmark are residence institutions for adult young people, chiefly from rural life. They are not vocational, but cultural, in their purpose. All of them, and of the agricultural schools, are private institutions, usually owned by the principals, but sometimes by an association. None but principals who combine such qualities as intelligence, forceful speech, business ability and good personality can succeed. Though the government gives financial aid it does not interfere in management. Many schools would surrender government aid rather than submit to formal examinations by government.

A People's College which applies for public funds must first be recognized by government. In order to get recognition the school must have been in existence for at least two years and in both years must have had at least ten students for a year. No student may be under sixteen, and not more than one fourth may be under eighteen. The government makes grants according to the number of students. The poorer schools lose students and finally close. Thus the students and not the government rate the schools. Since there are no examinations and no degrees, the problem of uniform tests does not arise.

While the government allows a certain proportion of students under eighteen, the People's Colleges are conducted on the assumption that it is well to have a break in schooling between the fourteenth and the eighteenth year, or even longer. Many Danes hold that in this period of adolescence and maturing, young people want to grapple with practical affairs, to become self-sufficient and self-reliant. [1].

Parents generally agree that only students over eighteen should attend People's Colleges. They feel that students should first learn the manual labour of their future occupations, and should not attend People's Colleges unless and until they have strong desire for education. The experience of the Colleges proves that this desire to learn asserts itself without any urging.

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[1] While this programme of interrupted schooling has been highly successful for rural boys and girls, it is less so in the cities. For city youth the interruption of schooling often means that the time is spent in earning money and spending it freely on city distractions, so that when the years for People's College arrive, earning and spending and urban recreation habits have spoiled the natural interest. In Sweden urban People's Colleges have succeeded better, but they are more directly vocational in nature.

A typical school has about 125 students during the year, though some of the more popular ones have two or three times as many. Most People's Colleges are for both young men and young women. Generally the men attend from November to March, while the women, and sometimes men as well, attend from May to July. Some Danish People's Colleges are co-educational, as are most of those in Sweden.

The schools are nearly all located in the open country, a mile or two from a village or city. The students live in close association with teachers, often in one large building. The furnishings are simple, sometimes meagre, and so the students are not educated away from simple living. The principal and family have at least one meal a day with the students. Students and teachers eat at a common table, spend part of their evenings together, and there is the same familiar intercourse between students and teachers as among the students themselves.

Problems of discipline are practically unknown. Some schools have formal student government, but the shortness of the term prevents its full development.

About five per cent of the students come from cities and towns, and the rest from the farms and villages. About a third of the students go to schools in some part of the country distant from their homes, thus promoting national unity.

The curriculum of the People's College covers ground somewhat similar to that suggested by the University Commission's report concerning *general education* in the chapter on *Courses of Study*. The curriculum of the existing People's Colleges includes all major fields of general education, with literature, history, the art of government, the physical and biological sciences, and also ordinary practical school subjects to a greater or lesser degree.

Lectures are very much used. The secret of success with lectures seems to be the thorough mastery of the subject by the lecturer, his all-round education, and his great interest in his work. Text-books are not generally followed, though the library is much used.

The schools have a deeply religious spirit, but there is no formal instruction in religion. With a few church supported institutions this is not the case.

The People's College is attractive to young people. Many look forward to it for years, and save money for it.

Opponents of the People's Colleges held that the best preparation for a farmer is to learn agriculture, and that the People's Colleges were a waste of time. Others held that the peasants were incapable of culture. Agricultural schools were set up in opposition to the People's Colleges. They mostly failed except as they were taken over by men who had been trained in People's Colleges. The view has come to prevail that a young man should first attend a People's College and get a broad outlook on life, and then take courses in an agricultural school. There are as many agricultural colleges in Denmark with 40,00,000 of population as in India with 32,00,00,000. Since the boy or girl was out of school and at practical work from age 14 to 18 or 20, he has practical experience. The development of Danish rural life in agriculture, co-operatives, social legislation and decentralized industry is pointed to as evidence of the soundness of this position.

4. *Some Results of the People's College Programme.*—One over-all result is claimed for the People's College programme : that it has created an intellectual and spiritual climate in which progress seems to be the natural course. The People's Colleges do not have special courses on cooperatives, yet Denmark has a large and successful cooperative development, and most heads of cooperatives are men or women from People's Colleges. The People's Colleges are not political, yet it is claimed to be largely through their influence that Denmark is very advanced in social legislation. The Danes have a good government, yet they prefer to handle their own affairs in private cooperative groups, rather than to have an army of public officials and employees controlling their affairs. A list of some of the achievements of rural Denmark since the birth of the People's Colleges is instructive.

CULTURAL ACHIEVEMENTS

As a direct result of the People's College movement nearly every village and town has its lecture society. These have meetings once a month which combine literary and social interests. The meetings are eagerly attended. There is one such society for every 1,500 people in Denmark. The average attendance is about 100, so about 6 per cent. of the rural people of Denmark have such an experience each month.

A widespread habit of reading also has developed. Denmark publishes one magazine for each 2,200 people, and one daily paper for each 20,000 people. Nearly every home has its own library, and every small town its book store. The village public libraries of Denmark contain two and a half times as many books as do the city libraries, and the village circulation of books is larger. A new book is published each year for each 1,000 of the population, so each Dane must buy several books a year.

The speech of the common people, which Grundtvig nurtured as a literary form, has become the language of literature. The academic language of a century ago has entirely disappeared. With this simple speech of the people, Grundtvig held, " people can express the loftiest thought in plain words ". Of course, scientific nomenclature must recognize international usage.

The " old school ties " of the People's College help to keep alive fellowship and mutual understanding. There are alumni meetings each year, and also usually each fall several days are spent in a reunion where old students can refresh their outlooks and spirits. The attendance is large. Also extension lectures take the People's College to the villages.

SOCIAL LEGISLATION

Child labour is prohibited under fourteen years, and night work for children under eighteen. The old-age pension system of Denmark has been largely copied by England, the United States and New Zealand.

Insurance against accidents while at work is paid for by industry as a part of the cost of production. There is unemployment insurance, so that a person may continue to have an income if his job fails. This is managed, not by the government, but by the workers. Similarly " sick clubs ", to care for the

members during illness are privately organized and managed by the members, but with government financial help. There are also excellent old people's homes and provision for relief of invalids. Provisions for arbitration and conciliation between employees and employers, have largely eliminated industrial strife.

Economic Development

Of young men and women who attend People's Colleges, about 90 per cent. return to their home communities, while many others become rural teachers, managers of cooperatives etc. Thus the People's College is strengthening and refining, rather than impoverishing, the rural life. The Danish farmer has become a scientist at his work, and Denmark has become like a big experiment station in agriculture. Whereas their grandfathers were mostly tenants, more than nine-tenths of the farmers now own the land they cultivate.

A century ago a considerable part of Denmark was waste heath land. Nearly all this has been reclaimed, though sometimes thirty years of continuous scientific treatment is necessary to turn a barren waste into productive farm land.

The country has a large number of cooperative organizations through which the people serve themselves in many ways. The following list, published in 1939, indicates how the education provided by the People's Colleges finds expression in economic affairs.

Kind of Cooperative	Number of Organizations (approximately)	Year the First was Organized
Food-stuff Societies	1,387	1851
Dairies	1,400	1882
Dairy Societies	800	1887
Milk Testing Associations	400	1902
Danish Dairy Butter-seal Societies	1,400	1900
Bacon Factories	62	1887
The United Bacon Factories	60	1890
Danish Egg Export	700	1895
Potato Export	15	1913
Butter Export	10	1888
Cattle Export*	15	1898
Danish Bacon Company	1	1912
Cattle Breeding Associations	700	1881

Kind of Cooperative	Number of Organizations (approximately)	Year the First was Organized
Horse Breeding Associations	400	1879
Swine Breeding Associations	200	1882
Sheep Breeding Associations	150	1899
Goat Breeding Associations	60	1909
Cow-testing Associations	1,750	1892
Consumers' Societies	1,824	1872
Credit Associations	14	(1775)1850
Banking Associations	160	1897
The Co-operative Bank, Copenhagen	1	1913
Savings Associations	500	1884
Cattle Insurance Associations	2,500	(?) 1810
Bull Associations	1,400	1884
Hail Insurance Associations	20	1864
Storm Insurance Associations	10	1896
Fire Insurance Associations	10	1856
Accident Insurance Associations	(200,000 members).	1898
Life Insurance Associations	10	1904
Use of Machinery	2,000	1914
Electrical Plants	400	1895
Coal Supply Associations	600	1913
Fertilizer Associations	1,450	1866
Bakeries	40	1888
Fruit Societies	20	1903
Sanatorium Associations	1,200	1904
Cement Associations	850	1911
Renting Associations	1	1912
Total ..	23,520	..

There is a policy of " building from the ground up " and vesting the power in the local unit rather than in a central organization. The mortality of Danish cooperatives has been very low.

The cooperatives are open to all responsible persons, have democratic management, operate on a cash economy, and keep open accounts, with no secrets. The membership is voluntary and withdrawal without financial loss is made easy for a person who wishes it.

Throughout Denmark there are many agricultural study circles. Nearly every cottage has a radio, and broadcasts on agricultural and other subjects are frequent. There is an organization for national economic work for young people, for cooperative work undertakings, the aim of which is to increase the interest of young people in farming. There are gymnastic clubs in many villages.

Though Danish agriculture is very efficient, less than 10 per cent. of the rural people have attended even a six months' agricultural course. The agricultural quality is held to depend largely on a state of mind engendered by the People's College. The students develop a habit of study, the open mind, and appreciation of expert knowledge and of cooperation.

All over Denmark there are " societies of control ". These are cooperative societies which employ agricultural experts. The expert advises on soil, crops and live herds, and prescribes feed and care. When market conditions change, the farmer is advised by his expert what to do, and he can at once change crops to meet new conditions. Thus the whole agriculture of Denmark has made quick shifts to meet new international conditions, and this without any government dictation.

The People's College has not been the only progressive element. The democratic constitution of Denmark, like that of India, was the result of a somewhat romantic middle class movement, following the trend of the times. Grundtvig believed that for actual democracy to appear there must be general education for the common people. When the new peasant party sought thorough-going reforms, the same liberals who put through the new constitution united with conservatives to prevent democratic policies from emerging. Two great political figures, Georg Brandes and Viggo Horup, fought for democracy, and were largely instrumental in bringing it about. A vigorous contest raged from 1870 to 1901, when a new and very democratic constitution was adopted.

5. *Limitation of the People's College Movement.*—The Danish People's College is no self-perpetuating system for achieving high citizenship. When Grundtvig outlined its principles more than a century ago he was far in advance of his day, and the effort to achieve his ideals brought a great upsurge in the national life. Were he living today he doubtless would have accepted the scientific attitude and its social implications. His followers until recently tended to retain the position he held in his day, rather than to progress as he progressed during his life. Some people feel that some of the Danish People's Colleges through this kind of orthodoxy are tending to become static, and are losing their position of vital leadership.

6. *Lessons for India.*—There are two dangers in the Indian basic education movement. One is that it shall become conventional, worldly and self-seeking, losing its strong consecration to fundamental human needs and values. The other danger is that it shall fix as a rigid orthodoxy the position Gandhiji took under the particular circumstances of his time, and shall not grow and progress in his spirit of " experimenting with truth ". There is danger of yielding to both these tendencies at the same time. A People's College movement would need to guard against both dangers.

For an institution similar to that of the Danish People's College to develop in India will require a supply of suitable teachers. This may well be one of the activities of the rural universities. The rural university in this way would help to build a bridge between the world of scholarship and the life of the common people. Fortunately there exists in India a body of men and women committed to rural education and experienced in it who could make a substantial beginning to that end.

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Numbers 2 and 4 are out of print.

Numbers 1, 3, 5, 6 and 7 and occasionally copies of the others, can be supplied by Community Service Inc., Yellow Springs, Ohio, U.S.A.

APPENDIX Q

II.—New Rural Professions

The following descriptions are of new or partly developed professions mentioned in the chapter on Rural Universities. Some of these are rural in their nature, while others, though concerned with the whole of Indian life, are definitely appropriate for rural university study.

Water Control Engineering.—Because of the seasonal distribution of rainfall over most of India, and of the semi-arid condition of much of the country, and also because the principal crop, rice, requires irrigation, the very life of India depends on the control of the water supply. If the use of the river flow in India should be increased from five or six per cent to twenty five or thirty per cent, and if other good agricultural practices should be followed, the crop yield of India might be more than doubled, floods could be reduced, and health conditions in some areas could be greatly improved. In this development water control engineering must play an important part. Large scale river control for irrigation, flood control, power development and navigation will go far in increasing the total water supply for irrigation.

Where electric power is generated, there need be no conflict between basic industries, such as aluminium and chemicals which use large amounts of electric power, and vigorous development of rural life and industry. The use of large amounts of power in basic industries may actually make more feasible the electrification of rural areas. Moreover, there is no reason why the basic industries should be located in cities. They can be located in the midst of a group of villages, getting their labour from such villages. The Alcoa, Tennessee plant of the Aluminium Company of America, the largest aluminium plant of the world, is so located.

The control of great river systems is only the beginning of the work of the water control engineer. After such great projects are carried to the utmost, a large part of India must depend on more limited sources of water supply. The construction of tanks by modern methods can be greatly extended.

As Indian farming is improved and mechanized, even though still conducted on a relatively small scale, perhaps twice as much total crop will be raised by a quarter as many farmers. Probably a hundred million Indians will be released from agriculture. One of the ways in which very large numbers of men can be used for long periods is in providing storage for surplus water, even by the excavation of great cisterns where that is the only possible method. In the need to find employment for the large numbers so released there will be justification for water storage projects which in other conditions would not be economically sound.

A great deal of Indian agriculture is carried on by pumping water from wells. So long as such pumping is by human muscle power or by bullock power there may be little danger of exhausting the ground water. With electric power a hundred times as much water might be pumped from a single well, and the ground water might be exhausted. Water control engineers should make careful ground water surveys where irrigation is by pumping. In some cases it will be necessary to rigidly limit the amount of pumping to prevent the failure

of agriculture in large areas. Legislation similar to that previously suggested for relocating villages could be used for administering the ground water supply.

Over a considerable part of the peninsula, ground water is found only in fissures in the underlying rock. If a well intercepts one of these joints or fissures an abundant supply may be had. If it misses a fissure by five or ten. feet the well may yield almost no water. Much hard work is wasted in digging dry wells. The water control engineer should become skilled in geophysical exploration, so that by the use of electrical and electronic devices water veins can be located and the waste of digging dry wells can be avoided.

In some areas it is possible to spread the flood flow of rivers so that it will sink into the ground and renew the ground water. This process has been developed in California.

Irrigation often results in the accumulation of salts at the surface and in the ruin of fine irrigated lands. The water control engineer can prevent this, and can even reclaim land that is naturally too heavily impregnated with salts to raise crops.

We have outlined some of the work of the water control engineer to show how an only partially developed profession can grow and can contribute greatly to the wealth and economic security of rural India.

Soil Improvement Engineering.—The earth was not made for man's special benefit. He takes it as he finds it and improves it to suit his purposes. Civilization is largely made up of the efforts of men to master nature and to make it serve their needs. In very little of India is the rainfall ideally distributed for agriculture. So men correct the unbalance by irrigation. The soils of India are the results of geological forces having no purposeful relation to maximum productiveness. They must be studied, understood, and completed by human effort. There are some who disapprove of the use of mineral fertilizers to correct natural or man-made soil deficiencies. Natural soils vary greatly in the presence or absence of the mineral elements which are essential to the best growth of plants, and therefore in their fertility. It should be the aim of soil improvement engineering to secure the optimum mineral balance so that a soil being treated shall approximate to the best balanced and most productive soils found in nature. Just as land may be ruined by excessive or unskilled irrigation, so can it be injured by unskilful use of fertilizer. The cure in each case is not to " go back to nature ", but to master the subject by scientific inquiry.

Much exploration is yet needed before the treatment of soil can be made to reach its full possibilities. This is true not only as to mineral contents, including such necessary " trace elements "as manganese, boron, cobalt, zinc and copper which have been overlooked until recently, but also with reference to soil organisms which help or hinder the growth of crops.

Much of the soil of India is seriously eroded, part of it so seriously that it is entirely out of use, except for poor pasture. By the use of good engineering and modern equipment such as bulldozers, millions of acres of this abandoned and can be brought back to full production.

Ancient Peru, which before its conquest had perhaps a higher degree of economic security than any country in the world, developed most of its agriculture on steep rocky mountain sides, by means of stone terraces so well built that after four centuries of neglect by the conquerors, they are still largely intact. A Peruvian, working for his government, might spend his entire life in building terraces and filling them with rock and soil so as to create a few acres of land. The process was time-consuming, but once completed and supplied with water through irrigation canals built along the mountain sides, the terraces formed new land which would support a family for generations to come. The Irrogotes of the Phillipines similarly practice successful hillside terracing, as do farmers in the Himalayas. As a means for using very large numbers of men displaced from agriculture in ways which will add to the permanent national resources, land terracing has vast possibilities for India.

At the mouths of India's great rivers are vast expanses of land a little below sea level, or so little above that they are too wet for cultivation. Holland has reclaimed large areas of such land, not nearly as fertile, and thereby has added to her population resources and to her wealth. With proper soil improvement engineering India can in the same way add fertile lands and good homes for millions of people. The Sunderban area in Bengal is evidence of such possibilities in India.

These suggestions by no means exhaust the possible fields for the soil improvement engineer, but they indicate what a variety of work is open to this new rural profession.

Temperature Control Engineering.—The tropical sun's heat, which now in many ways is a handicap to Indian life, can become one of our great resources through the new profession of temperature control engineering. Much of India needs hot water, especially during the winter months. It is entirely feasible, by means of simple engineering and construction, to use the sun's energy to heat water which then can be stored in insulated tanks. In this way a year round supply of hot water can be provided without the use of fuel, as is done in America under far less favourable circumstances.

With somewhat greater expenditure the heating of entire houses during winter months can be done by using solar energy for heating and storing water, using circulating hot water for warming a house. In that way nearly all fuel for house heating may be saved. Homes, schools and factories of the future will have temperature control to make them pleasant places for working during hot weather.

Every good village should have a cold storage and " deep freeze " centre for the preservation of food, as well as refrigeration for each family. Every important fishing village and every large fishing vessel should have provisions for cleaning, packing and freezing fresh fish, and there should be provisions for shipping frozen foods. For these and other uses, temperature control engineering can have great extension in rural India. Food preservation by freezing will come to be one of the common necessities which a village cannot afford to be without, just as many villages cannot afford to be without irrigation water.

Food Processing Technology.—Many kinds of food are overproduced at some seasons and almost wholly lacking at others. Food processing and preservation can greatly increase and stabilize the food supply. Much grain is lost because it is stored with too much moisture. Control of the moisture content of grain for storage is becoming well developed. All these processes require a high degree of training and skill, and constitute a new profession or technology.

"*Chemurgic Engineering*".—This is a term given recently in America to the process of turning farm crops, especially waste, into industrial products. The half million tons per year of waste molasses in the sugar industry should be used for production of industrial alcohol, stock feed, fertilizer or other useful products. Sugarcane bagasse and jute waste should become an important source of highly desirable building materials for interior work. Castor oil may become an important source of nylon fibre. The vegetable oils of south India may be processed for many industrial purposes. The possibilities of sisal have not been fully explored. Many of the forest trees and wild plants of India are unexplored as to their chemical industrial possibilities. "Chemurgic Engineering" opens new world for rural industry.

Ocean Products Technology.—India is bordered by fishing villages, but the processes are almost as primitive as a thousand years ago. The head of the Oceanographic Institute at Woods Hole in the U.S.A. recently expressed the opinion that in large areas of ocean south of India an acre of ocean would produce twice as much food as an acre of good Indian land. Ocean products technology can begin with improvements in packing, cooling or freezing, transporting and marketing fish products, and in processing and selling fish wastes for industrial products, poultry food and fertilizers.

But that need be only the beginning of a great new field of industry. As the profession of ocean products technology develops we may look forward, not only to a great direct increase of food supply, but to a very large increase of fertilizer, made of all living things in the ocean, plant or animal, not otherwise useful. The ocean, especially those parts where "plankton" and other life is most abundant, can be a vast source of vitamins, drugs, oils, glue, chemicals, leather, poultry food and fertilizer. The fishing villages and towns around the coast of India may become places of varied industrial life. Ocean resources may go far towards balancing India's food budget.

Mineral Processing.—India has a great variety of mineral products. There is no reason why these should be sent to large cities or to foreign lands for processing. Much of that work can be done by village or small town industries at or near where the minerals are found. Mica can be prepared ready for final use, including ground mica for paints and lubricants. Kyanite can be made into furnace linings, asbestos into roofing and other products. The field of mineral processing is so large and so varied that any detailed discussion is out of place.

Rural Industrial Counselling.—By and large, the chief disadvantage of much small industry is less in small scale production than in the limitations of small scale management. Big industries can afford specialists in administration, in buying, selling, finance, accounting, labour management, and in the

development of manufacturing processes, and research. For small scale industry to realize its full possibilities it is necessary that such special services shall be available to small industries as well as to large ones.

This need of small industry for specialized services is only now becoming generally recognized. In America such help is becoming available, chiefly from private organization, but in a lesser degree from the government. In Scandinavia the same results are being achieved by cooperation of small industries with the help of government.

In Finland a very interesting process is under way. About two hundred small metal industries, scattered over Finland, with from three or four employees to two hundred employees each, have developed a cooperative organization for supplying the member firms with these specialized services. A central office was set up, supported by a percentage of the income of each member firm. This office supplies its members with technical advice and services of many kinds. It looks after import and licencing arrangements, purchases supplies and raw materials, works out new technical methods for manufacturing, prepares accurate working drawings and specifications for products being manufactured, helps in marketing products, supervises accounting and business management, and arranges loans at the banks. Where the central office, with its staff of forty members, cannot supply the research facilities or the technical services in Finland, it can locate such services in the adjoining countries, and can quickly make the necessary arrangements.

Thus these little firms, through their cooperative organization, have available the highly specialized modern technical services which had been available only to great corporations. This development has occurred in a poverty stricken, war devastated nation, in a barren country along the arctic circle among a people just emerging from primitive life. They do have the advantage of a high quality of integrity in personnel, business and public relations. In India a similar movement has been suggested by Sir M. Visvesvaraya through the All India Manufacturers' Organization. The Indian rural university might well undertake to develop and to supply leadership for these services so essential to the success of small rural industry. Somewhat similar services are necessary for agricultural marketing cooperatives.

Rural Public Administration.—The profession of public administration in a rural democracy has yet to be developed in India. Democracy cannot thrive unless the people learn to handle their local affairs themselves. If the new India is to be truly democratic it must learn to combine the local management of local affairs, and the regional management of regional affairs, with co-operation and unity in those matters which must be dealt with by the nation as a whole.

In all democratic government, while the general over-all control rests with elected representatives of the people who come from every walk of life, the actual administration of the public business can best be performed by professionally trained, skilled and experienced specialists. The *firka panchayats* will need permanent secretaries. District police supervisors should be, not politicians, but professionally trained men who are skilled in the theory and

art of public order and safety. The rural university should train professional safety directors. While in much of India land records are well kept and present no serious problem, yet in other parts such record keeping has been a vast source of petty blackmail, graft, special privilege and coercion by small officials and self-seeking persons. This whole field of title recording and administration should be raised to a professional level. It should fall to the rural university to develop good methods of title administration, and to train men for that work.

There are many other elements of rural public service for which the rural university should prepare. Travelling accountants could train local officers in simple accounting methods for villages, and for the larger administrative units between village and district, which have different names in different parts of India. They could also supervise accounts and prevent irregularities. Sanitary officers will need to be trained, the distribution of irrigation water should be improved, and the collection of taxes should be regularized.

Rural Social Welfare.—Over all of rural India, aside from missionary undertakings, there is very little provision for the care of the aged or orphans, crippled, blind and deaf. Nor is there any orderly provision for relief in time of natural catastrophe. Rural social services should be developed, not to take the place of neighbourly care and friendliness, but to help them to intelligent action and to supplement them where necessary. This work should not be over-professionalized, but should strive to make the ordinary processes of family life and neighbourliness intelligent and effective.

Even though care of the sick is a neighbourhood service, performed without pay, the educating of village women in such intelligent care will provide work for many well trained professional women. Education in community life, cooperation and organization may quite change the spirit and character of a village. The quality of family life can be greatly changed for the better by wise family guidance, and by education directed by qualified workers. The teaching of nutrition and food preparation in villages will provide careers for many trained women. Village people do well to direct their own recreation, yet a trained recreation leader may be effective in teaching the best folk dances, games and other forms of recreation. The work of a single recreation leader has sometimes changed the recreation habits of many villages and developed local amateur leaders of community recreation. Keeping in mind the policy that so far as possible the social services of villages should be voluntary neighbourly action, yet in many fields there is room for well trained professional social workers to provide education, encouragement and supervision for such voluntary effort. The various rural social services are now scattered through several departments of government, with consequent overlapping and confusion. The rural university might well be an agency for unifying and harmonizing the rural social service work of the various departments of government.

The field of professional social service is constantly broadening and is providing training for men and women in new and important fields. There is prospect that it may contribute substantially in enlarging and refining the cultural and social quality of rural India.

Rural Land and Village Planning.—As discussed elsewhere in this report, most Indian villages should be entirely rebuilt, often on new locations. It may seem at first thought that a village is only a village and needs no skilled planning. Such is not the case. The wise location of streets so that the natural drainage will be good, the proper planning and location of sewers and drains, the best size, shape and location of house sites, the best size and location of playgrounds, school houses, public buildings and meeting places, garden plots, pastures and barns, airplane landing fields, and locations for industries—all these are important, and trained and experienced men and women can best handle them. In many cases groups of villages will unite in planning landing fields, playgrounds, schools, common pasture, or industries. There again professional planners will be useful.

One of the great wastes of Indian agriculture is the fragmentation of land holdings. Land planners, working under suitable legislation, should become skilled in working out and administering the consolidation of land holdings, and in suggesting improvements in legislation for that purpose.

More and more India will want to preserve its wild spots of natural beauty, making them precious possessions of the whole people. Land planners should be skilled and experienced leaders in this movement.

Altogether the profession of land planning can become highly developed and highly useful. To make it such should be the work of the rural university.

The Profession of Social Engineering.—In the old days most disputes or other differences were settled by local panchayats or village elders. Few cases went to the courts. With the imposition of English law and the rise of urban university law schools the condition has greatly changed. There is litigation everywhere. Small town lawyers thrive chiefly as people quarrel. We are told by well informed advocates that outside large cities, more than 90% of legal practice is due to quarrels and litigation.

For the welfare of rural India the legal profession as it now exists should be largely replaced by the profession of social engineer. His work should be, not to win law suits and thereby to pile up a fortune, but to prevent the need for litigation and to further social harmony. He should aim at reviving the settlement of differences by informal agreement before panchayats or rural elders, and to clarify social customs and social relations, so that there would be fewer occasions for disputes. He should encourage the habit of making clear records of important agreements so that misunderstandings will not result from poor memory. The English law brought traditions of equality of rights to a culture in which some persons were considered to be superior and others menials. While we hold to the new concept of equality of rights emphasized by our constitution, the old habits of internal harmony and informal solving of differences should be revived. Social engineering should be not a technique for maintaining the *status quo* of privilege or class stratification. The basic human rights of the new Indian constitution should be its guide.

The drafting of legislation affecting rural life should be the careful, skilled work of the social engineer who has learned to fully understand and to fully state the issue, who knows what legislation of the kind in this or other countries has been most successful, and who knows how to provide the simplest, most economical, and most easily understood legislative expression. A vast amount of bad government comes from unskilled drafting of legislation. As a rule the politician wants his legislation to be successful, and would welcome such help. The social engineering profession would also watch proposed legislation to draw public attention to that which would be harmful because of careless drafting. The social engineer should be recognized as no less important to society than the public health officer, and should similarly be supported by the public.

Rural Sociology and Anthropology.—The field of rural sociology should not be a bookish subject, though a solid background of scholarship is necessary. The culture of India possesses many elements. It should be the chief business of the rural sociologist and anthropologist to know what these cultural resources are, to insure the preservation and discrimination of their valuable elements, and to introduce new cultural elements which will add to the range and quality of social life.

Rural Arts.—Similarly, the resources of rural arts, crafts, games, music and dancing should be explored and the best preserved and spread, somewhat as is being now accomplished at Santiniketan. Numerous such centres of influence at rural universities, with mutual give and take with primary and secondary schools, would be desirable.

Rural Medical Service.—Most doctors trained in urban medical schools shun rural life. Both in urban and rural medicine there are many physicians who are maintaining a high standard of unselfish public service. But perhaps there are not enough of them to determine the over-all attitude of the profession. One reason for inclining to this opinion is that many of the successful urban physicians have inherited the traditions of undemocratic aristocracy. The medical schools find difficulty in securing able men who will give up large incomes for teaching. The rural university should develop a different medical tradition. The rural physician should cast his lot with the people he serves, taking only a moderate income, such as will give him moderate economic security and enable him to keep fully in touch with developments in his profession.

The possibilities of cooperative medicine and health service should be developed. Along with the training of rural physicians the rural university should train physicians' assistants and nurses. These assistants can handle the routine health work of the villages from secondary school centres, while the rural physician can receive the more difficult cases at larger clinics or hospitals properly spaced, where feasible at the sites of medical schools. These need not be in cities. We are informed by the head of a very large clinic in a very small town that distance from the city is an advantage. It sifts out the ordinary routine cases, and leaves space for difficult cases from which students can learn most.

APPENDIX R

III.—Suggestions for Research in Rural Universities.

In extension of the discussion of research in the chapter on Rural Universities, the following are illustrative of subjects that would be appropriate for rural university research, though many of them would be suited to other universities as well. In most of the fields described there are opportunities for good and important work, even where laboratory equipment is meagre or perhaps entirely absent. As a rule some library facilities would be necessary. Of course, adequate laboratory facilities would greatly assist research, and in some cases, as in much exploration of natural resources, would be necessary.

Ethical Research.—Cannot the spirit of research challenge the saying that science is concerned only with statistical facts, and not with values. Where is there better opportunity than in India to use the methods of science to explore both the means and ends of living ? Ethical research can address itself to the practical problems of rural India. What personal and social customs tend to encumber and degrade life ? What conditions lead to those habits ? Can clear statements of ethical policy be made, based on disciplined scientific observation and therefore subject to test and verification, which will define desirable personal and social attitudes, and therefore lay a basis for removing harmful human relationships ?

Such ethical research might well cover all the motives and customs which so obstruct harmonious and effective living. It can explore the conditions which produce these undesirable attitudes and the conditions which favour goodwill, integrity, and wholesome human relations. Such inquiry will call for the help of biology, psychology, sociology and anthropology. Seldom does any one field of research stand alone. A chief hindrance to such exploration is moral timidity. It takes courage to examine objectively a custom which is general and long-lived.

Psychological Research.—What prevents the rural Indian mind from constantly searching for better ways of living ? Is it not true that the rural Indian mind is naturally as keen and vigorous as any other ? In what way can old sets of mind be broken and an attitude of eager inquiry be awakened ? The methods used by C. H. Robertson in China in arousing whole areas of seemingly lethargic villagers to a high pitch of interest in modern science, might well be studied. The psychologists have the rare opportunity of critically exploring the processes of the rural Indian mind, and of learning how on a vast scale to arouse and awaken those minds without coercing or dominating or exploiting them. As a rule, psychologists who are from the villages and who know and respect the village mores can do this best.

Sociological, Anthropological, and Cultural Research.—The social background of India is exceptionally rich in what is very good, but also contains elements that account for much of her troubles. Research in rural sociology, anthropology and culture should prevent any impulsive rejection of India's past as being out of date, and may help bring an end to blind acceptance of harmful or useless elements, now retained because they are old and deeply

entrenched. Such evaluation will objectively and critically examine, explore, test and appraise in order to disseminate what is good, and to purify the cultural inheritance from that which has prevented fulfilment of possibilities. The method of disciplined critical objective inquiry, applied to a study of rural India, may bring about greater changes in decades than otherwise might occur in as many centuries, and the changes can be wise and discriminating, rather than a drifting with the prevailing currents.

Research in Population.—The impoverishment of rural life in India has been accompanied by excessive increase in population. Quite commonly the people who seem to have least to live for have the most children. When life is rich and varied and there are many interests to share attention, families are generally small. When life is reduced to ignorance, poverty, and the bare rudiments of existence, the birth rate is usually high.

The regard for large families, which may have been appropriate when infant death rates were very high, may be inappropriate in modern society. Population policy should be a live study, adjusting to whatever conditions actually exist, whether they be of over or under-population. Here is a very important field for research, especially in India where a dense population is increasing rapidly. The fundamental inquiries are yet to be made. What density will bring the greatest total value of living ? Should numbers increase to the very limit of subsistence ? Are there other desirable limits of population than capacity for subsistence ?

What aesthetic values are concerned with population policy ? Is it desirable to have fewer people, so that each may have space for self-expression and freedom of motion ? It is almost universal for successful men to try to surround themselves with ample, uncrowded space, if necessary keeping out the crowd by walls or other barriers. In such ways they give expression to the deep and nearly universal human craving for " elbow room ". What every man craves for himself may be a desirable aim for society. Should space be saved for those who crave quiet and solitude ? Should parks and areas of natural beauty be preferred to filling those spaces with more population ? What degree of contact and intimacy makes for the best quality of living ? Unless a basis for policy is laid by sound research, how can population policy be based on any factors except limits of subsistence, or the need for armies for defence or conquest ?

Even while such fundamental studies are being carried on, practical consideration may call for policies which will check population growth. What has been the experience with such policies ? How long a natural lag will there be between reduction of the infant death rate and reduction of the birth rate ? What are the affects of contraceptives ? How can the public best be educated in birth control, and what forms of birth control are desirable ?

What eugenic practices and policies can help to raise the average quality of the population while checking its uncontrolled increase ? What basis have we for eugenic judgment, and how can that basis be enlarged ? How far can eugenic policy be furthered by education ? Does not India have in the cultural

in small units, to find industries which are suited to given locations and conditions, or to find locations and conditions suited to a particular industry, requires competent exploration. The difference between blundering and wasteful industrial development and that which has a high probability of success may largely depend on industrial research. As rural post-basic education calls for small industries to contribute to self-support and to provide practical industrial experience, much competent industrial inquiry will be needed.

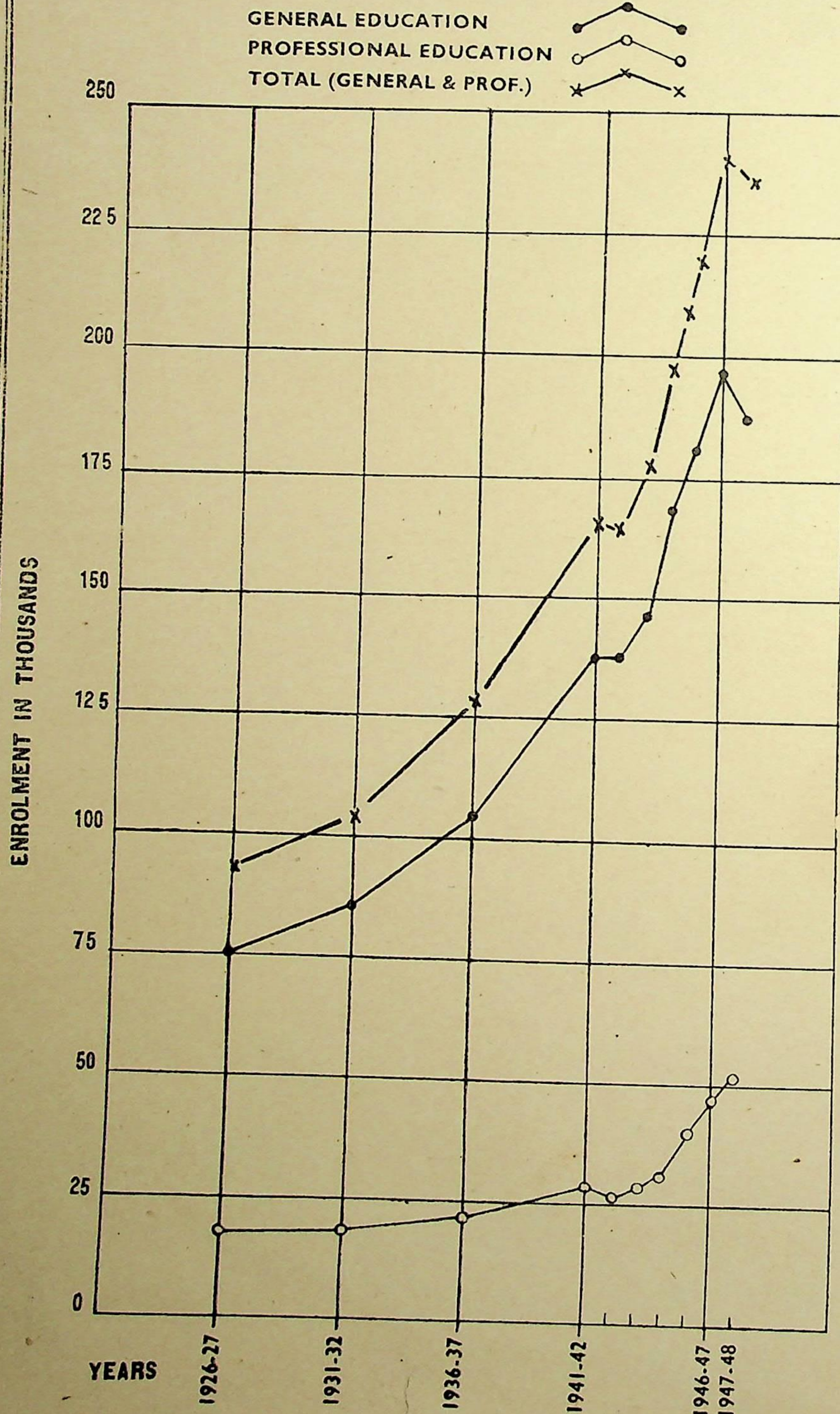
Research in Housing and in Building Materials.—The rebuilding of Indian villages requires extensive research. Pioneering in the design of village homes should assemble all that is known of good home design in every land. It should be thoroughly and intimately familiar with Indian village life. It should be scientifically and critically minded, and should have creative genius. All these qualities should be trained to the end of designing village homes that will combine great economy, durability, convenience and usefulness, and the full possibilities of beauty. This is a new world of inquiry for the Indian university.

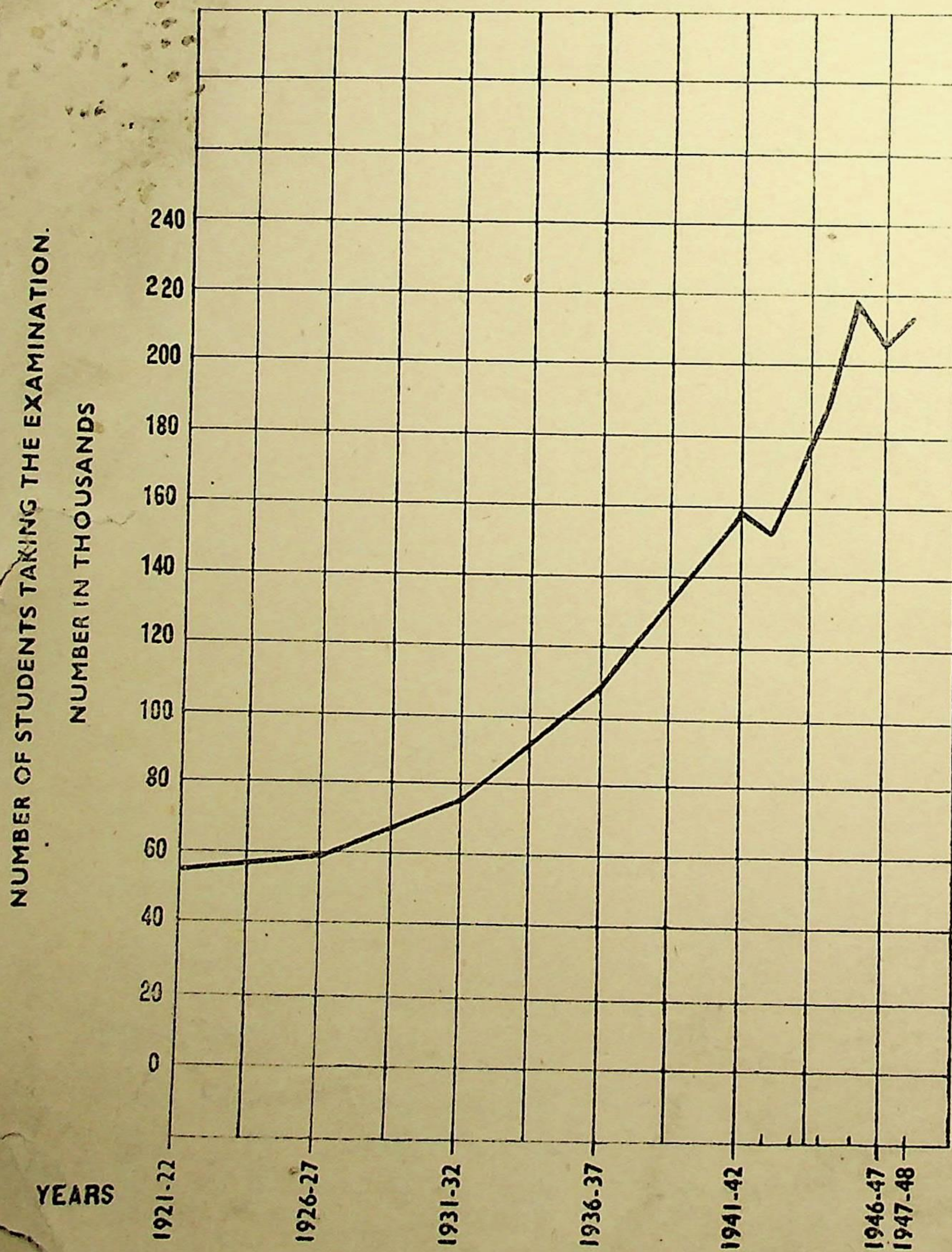
Agricultural Research.—Agriculture in basic education should make boys and girls familiar with the best of the old methods of raising crops, but should not stop there. It should lead them to be interested in the nature of soils and how they can be improved. It should interest them in improving varieties of crops, and in learning how to work the soil so as to get the best crops with the least effort. The aim should be that teachers of agriculture should be persons from villages who have gone through basic primary schools, basic secondary schools, and basic education universities, and who are at home on the land.

Research in agriculture can begin in basic education elementary schools. Where a crop is injured by disease, are there a few plants that do not get the disease, and that can be saved for seed ? Nature is constantly producing changes in nearly all species of plants. Some of these are improvements. If such useful changes are noticed and are propagated, there is improvement in the crop. If there are only a few university men who have their eyes open, most of such favourable changes will pass unnoticed and will be lost. If all boys and girls doing farm and garden work in basic education should know that nature is constantly making changes, and should get the habit of noticing them and of saving the most promising, improvement of varieties of crops might take place a hundred times as fast.

The same is true in many other lines, as in the improvement of farm tools, and in quicker and easier methods of cultivating, irrigating or gathering crops. This matter is discussed in detail to show that research is not a strange process that only university graduates can know about. Every boy or girl can be a research worker, and can get much interest in the process.

In a good basic education programme, the phenomenon which the boy or girl cannot understand will go to the teacher for explanation. The question which is beyond the university teacher will go to the research centre. If the specialist at such a centre wants to find something which may occur in nature, he can, through the basic schools, have a thousand pairs of eyes on the watch for it.

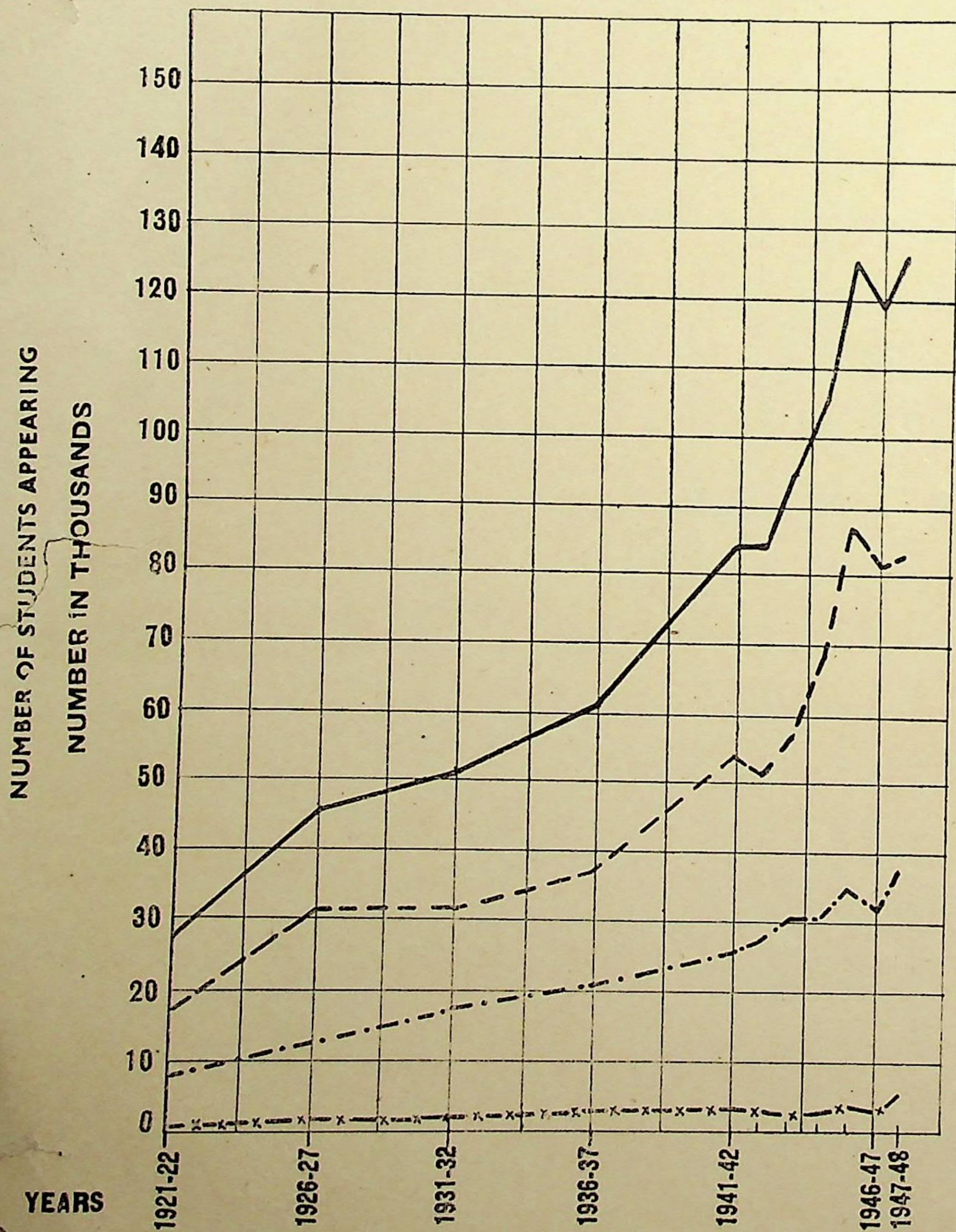

ENROLMENT IN UNIVERSITIES IN INDIA
GENERAL EDUCATION
PROFESSIONAL EDUCATION
TOTAL (GENERAL & PROF.)
ENROLMENT IN THOUSANDS
250
225
200
175
150
125
100
75
50
25
0
YEARS
1926-27
1931-32
1936-37
1941-42
1946-47
1947-48

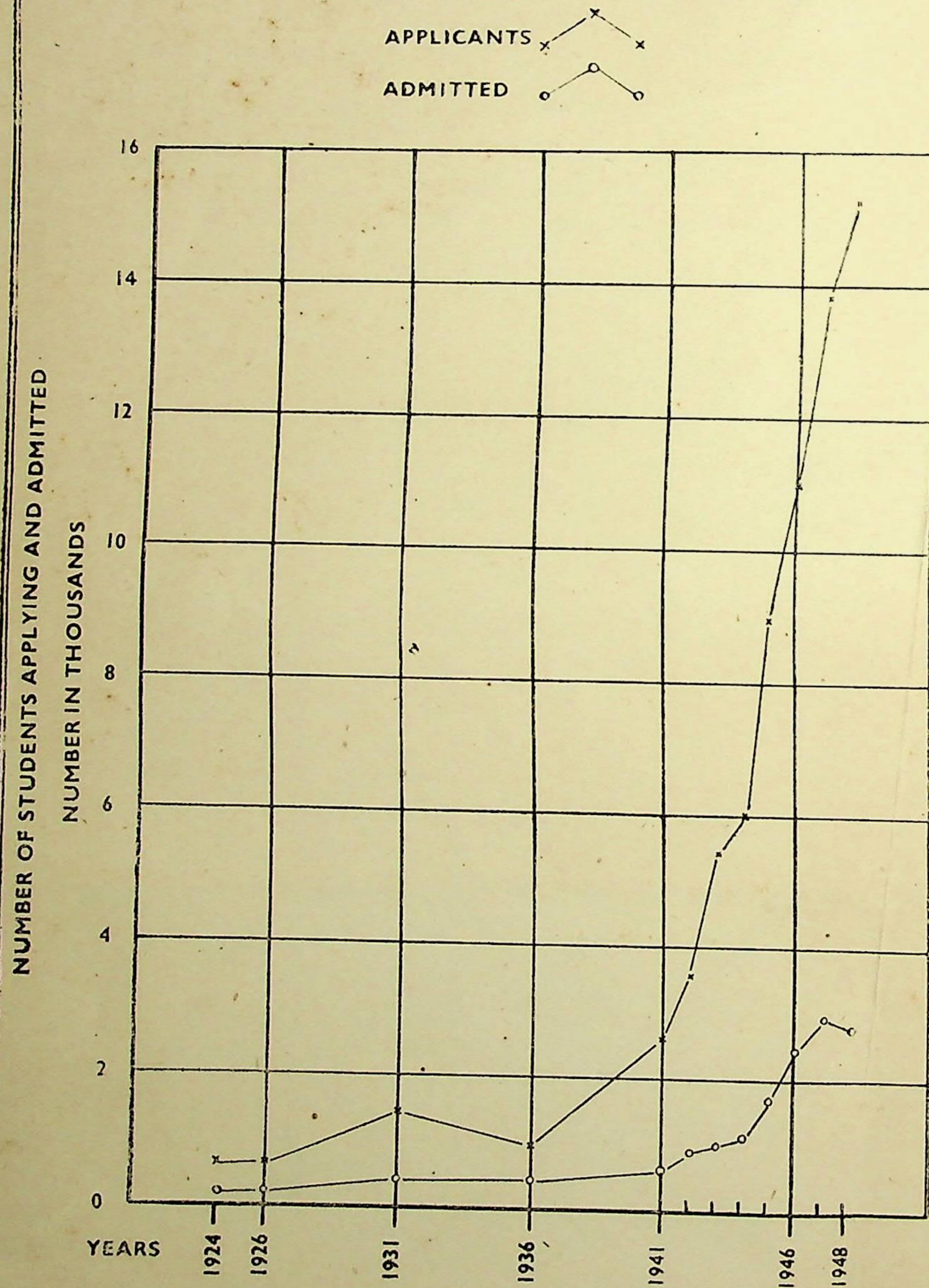

MATRICULATION & EQUIVALENT
EXAMINATIONS IN INDIA
NUMBER OF STUDENTS TAKING THE EXAMINATION.
NUMBER IN THOUSANDS
240
220
200
180
160
140
120
100
80
60
40
20
0
YEARS
1921-22
1926-27
1931-32
1936-37
1941-42
1946-47
1947-48

UNIVERSITY EXAMINATION IN INDIA

GENERAL EDUCATION

ARTS & Sc. INTER
B.A. & B.Sc.
M.A. & M.Sc.
TOTAL





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